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Editor - Captain H. GARBETT, R.N. (Retired),

To whom all communications should be addressed.

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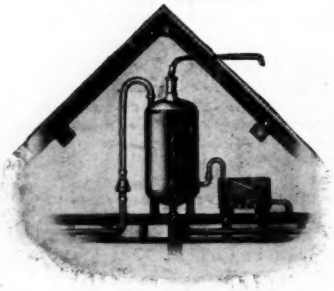

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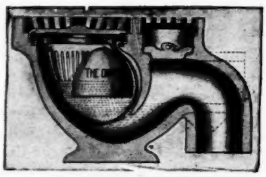

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STAFF COLLEGE, AUGUST, 1906.

The following Officers, whose names are arranged in regimental order, were successful from us at the recent Competitive Examination for admission to the Staff College:—

Capt. C. Evans, R.F.A.
Capt. G. C. Merrick, D.S.O., R.G.A.
Capt. W. H. Moore, D.S.O., R.G.A.
Capt. J. P. Mackesy, R.E.
Capt. B. W. B. Bowdler, R.E.
Capt. F. D. Farquhar, D.S.O., Coldstream Gds.
*Capt. R. G. Parker, Royal Lancaster Regt.
Capt. G. N. T. Smyth-Osbourne, Devonshire R.
Capt. V. H. M. de la Fontaine, East Surrey R.
Capt. and Brev. Major F. R. Hicks, Hamps. R.
Capt. H. S. Williams, Dorsetshire Regt.
Capt. B. D. L. G. Anley, D.S.O., Essex Regt.
Capt. R. S. Hamilton Grace, Durham L.I.
*Capt. H. F. Baillie, Seaforth Highlanders.
Capt. P. S. Allen, Gordon Highlanders.
Capt. J. K. Cochrane, Leinster Regt.
Capt. R. L. Ricketts, Indian Army.
Capt. W. K. Bourne, Indian Army.
Capt. F. W. Lumsden, Royal Marine Artillery.

And the following received nominations:—

Captain H. C. Bickford, 6th Dragoon Gds.
Captain C. J. C. Grant, Coldstream Gds.
Captain W. D. Wright, V.C., R.W. Surrey R
Captain C. H. Harington, D.S.O., Liverpool R.
Captain H. Wake, D.S.O., K.R.R. Corps.
Captain and Brev. Major N. J. G. Cameron, Cameron Highlanders.
Captain G. P. Grant, D.S.O., Indian Army.

SANDHURST, JUNE, 1906.

FIRST	...	A. G. Armstrong	5,541	129th	...	R. P. T. Ffrench	3,827
48th	...	H. G. Gauntlet	4,515	181st	...	C. W. Molony	3,445
67th	...	D. Macdonald	4,299	186th	...	P. J. I. Synnott	3,386
89th	...	W. G. Bagot-Chester	4,115	190th	...	R. M. Aylmer	3,339
90th	...	A. G. Ottley	4,109	197th	...	O. Gough	3,262
93rd	...	A. P. Williams-Freeman	4,091	201st	...	P. W. J. A. Stomm	3,151
115th	...	D. M. Black	3,940	213th	...	B. W. Molony	2,881
125th	...	W. J. King-King	3,846				

WOOLWICH, JUNE, 1906.

31st ... J. S. Barkworth ... 6 483

DECEMBER, 1905.

SECOND	...	H. G. MacGeorge	7,196	16th	...	R. Crofton	6,330
FOURTH	...	G. Walton	7,046	45th	...	D. Stephenson	5,899
FIFTH	...	H. A. Cox	6,967	54th	...	J. Kennedy	5,711

This was the First Examination under the new regulations, and our pupils secured THREE out of the first FIVE places.

MILITIA COMPETITIVE, MARCH, 1906.

A. E. Hardy	...	...	2.304	W. F. Anderson	...	...	1,947
N. H. Hutcheson	...	...	2,105	D. C. Robinson	...	...	1,879
*F. D. Frost	...	...	1,949	F. A. Bowring	...	...	1,876

* Read partly at the Army College, Aldershot.

ARMY QUALIFYING, 1906.

NINETEEN PASSED FROM US.

Special Arrangements have been made for the next Examination.

THE BARR AND STROUD RANGEFINDER. FQ. TYPE. 9 FT. (2·74 METRE) BASE.

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This Rangefinder is also supplied on a mounting suitable for use in fortresses.

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8 yards	at	3,000	,,
20 ,,		5,000	,,
190 ,,		15,000	,,

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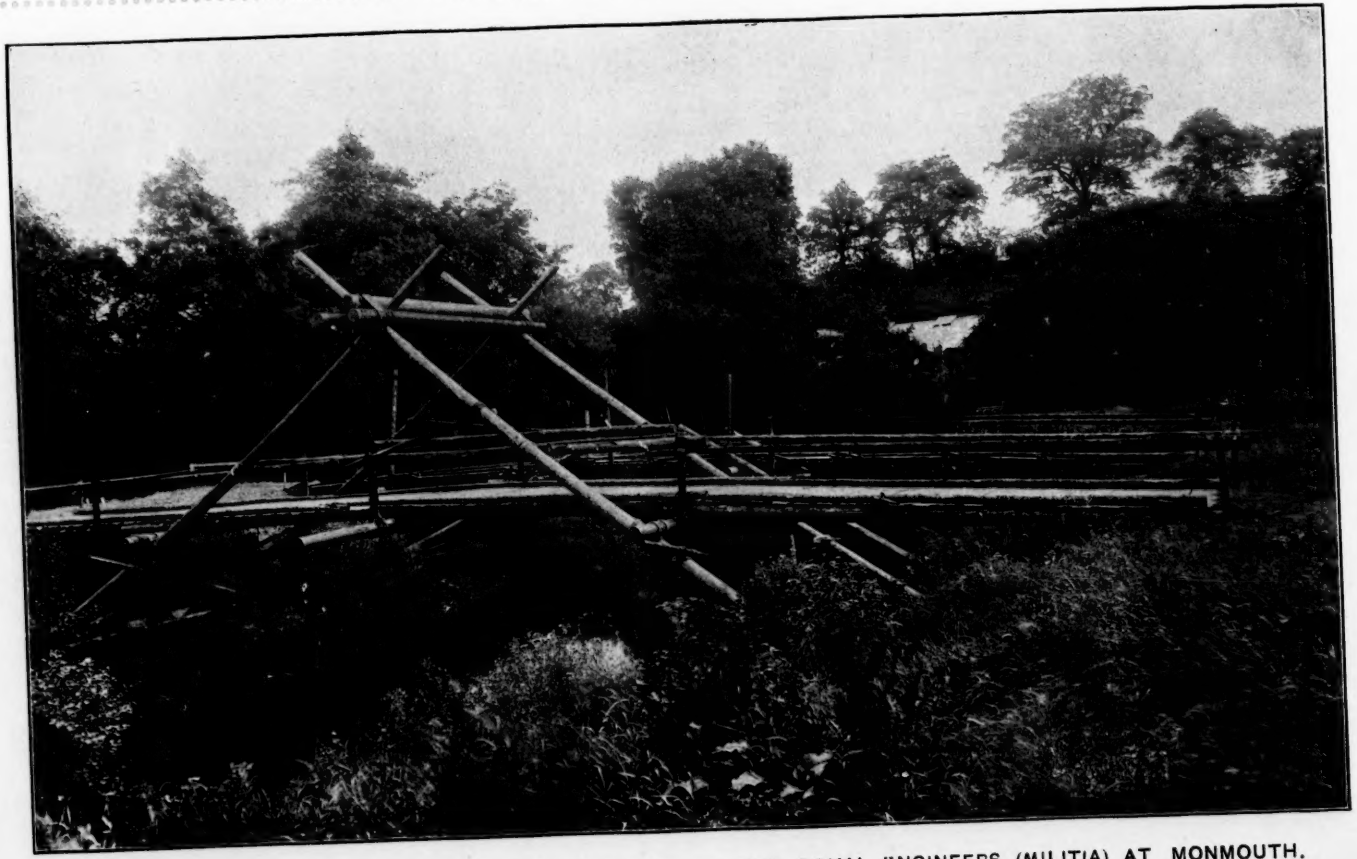

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THE JOURNAL

OF THE

ROYAL UNITED SERVICE INSTITUTION.

VOL. LI. NOVEMBER, 1907. No. 357.

[Authors alone are responsible for the contents of their respective Papers.

SECRETARY'S NOTES.

1. His Majesty the King of Spain visited the Institution on the morning of Monday, 4th November.

2. **OFFICERS JOINED.**

Captain H. D. McLaughlin, Indian Army.
Lieutenant Lord J. T. Stewart-Murray, Queen's Own Cameron Highlanders.
Lieutenant R. H. Leeke, Rifle Brigade.
Lieutenant V. F. Currey, Suffolk Regiment.
Captain H. R. Kemmis-Betty, Royal Canadian Regiment.
Captain W. H. Abell, Middlesex Regiment.
Lieutenant W. Macready, Indian Army.
Lieutenant E. A. Marrow, King's Own Scottish Borderers.
Captain A. C. R. Nutt, R.H.A.
Lieutenant T. R. Bowlby, Norfolk Regiment.
Major R. L. Angus, 2nd V.B. Royal Scots Fusiliers.
Second-Lieutenant M. B. W. Smith-Rewse, R.E.
Midshipman Hon. F. L. W. Vernon, R.N.
Captain G. A. Bridgman, Middlesex Regiment.
Second-Lieutenant R. D. Ross, North of Ireland I.Y.
Lieutenant J. B. Jenkinson, Rifle Brigade.
Captain W. E. R. Dickson, R.E.
Major-General H. Thomson, C.B., D.G.A.V.S.
Lieutenant F. T. L. Gaskell, A.S.C.
Captain R. A. M. Currie, Somersetshire Light Infantry.
Second-Lieutenant J. L. Cheyne, 16th Lancers.
Brigadier-General H. S. Raitt, C.B.
Captain C. H. Morgan, R.N.
Lieutenant-Colonel A. W. Chadburn, 1st Yorkshire R.E. (Vols.).
Lieutenant H. J. Jones, A.O.D.
Lieutenant J. Montgomery, 3rd Hussars.
Captain E. E. Coventry, East Lancashire Regiment.
Captain A. F. Simson, late R.M.A.
Captain H. A. Boyce, R.F.A.
Commander H. M. K. Betty, R.N.
C. E. Lea, Esq., late Captain, Natal Medical Corps.

Fleet-Surgeon G. T. Collingwood, R.N.
Captain W. H. Moore, D.S.O., R.G.A.
Major A. J. F. Eden, Oxfordshire Light Infantry.
Second-Lieutenant A. T. C. Wickham, 5th Bn. Connaught Rangers.
Captain C. M. Stephen, Cheshire Regiment.
Brigadier-General W. F. L. Lindsay, D.S.O.
Lieutenant G. M. Jennings, Royal Inniskilling Fusiliers.
Captain H. D. De Prée, R.A.
Lieutenant J. W. Lewis, West Kent I.Y.
Captain J. C. W. Connell, King's Own Scottish Borderers.
Captain B. R. Moberley, Indian Army.
Colonel H. S. Murray-Graham, late R.A.
Lieutenant C. H. Pilcher, R.N.

(No officer of the Royal Naval Reserve joined the Institution during the month of October).

3. CHANGE OF DATE OF LECTURE.

The Lecture by Brigadier-General Sir H. S. Rawlinson, on "Night Operations," which was to have been delivered on 20th November, has now been fixed for Wednesday, 4th December, at 3 p.m., when General Sir John French will preside.

4. LECTURES.

Wednesday, 27th November.—"Whitehall Palace, and the Execution of Charles I." By the Rev. Canon Edgar Sheppard, C.V.O., D.D., Sub-Dean of His Majesty's Chapels Royal. Major-General Sir G. H. Marshall, K.C.B. (Chairman of the Council), in the chair.

Wednesday, 4th December.—"Night Operations." By Brigadier-General Sir H. S. Rawlinson, Bart., C.V.O., C.B., *p.s.c.*, Commanding 2nd Infantry Brigade, Aldershot Command. General Sir J. D. P. French, G.C.V.O., K.C.B., K.C.M.G., in the chair.

5. CHANGE OF ADDRESS OR RANK.

Notifications of change of address or rank should reach the Secretary by the 10th of each month to insure the JOURNAL for the month concerned arriving safely.

Officers are also requested to write their names in capitals as well as placing their signatures on communications. Several signatures have been received during the past month which it has not been possible to decipher.

6. GOLD MEDAL ESSAYS.

The following Essays have been received from candidates for the 1907 Gold Medal:

"La Critique est facile, L'Art est difficile."
"Auri sacra fames."
"Pro rege et patria."
"Over Fork Over."
"Qualität vor Quantität."
"A Threefold Cord cannot be Broken."
"Carpe Diem."
"Armis exponere pacem."
"Tentanda via est."
"Sheep Scattered with a Shepherd."
"Labor omnia vincit."

THIRD PRIZE ESSAY.

Subject:—

"WHAT IS THE RELATIVE VALUE OF SPEED AND ARMAMENT, BOTH STRATEGICALLY AND TACTICALLY, IN A MODERN BATTLE-SHIP, AND HOW FAR SHOULD EITHER BE SACRIFICED TO THE OTHER IN THE IDEAL SHIP?"

By Lieutenant E. V. F. R. DUGMORE, R.N.

Motto:—

"For the King, the Law, and the People."

ENGLAND is the country to which, above all others, her Navy is pre-eminently important; as has been urged with such wearisome frequency, her very existence depends on it. Let the question, therefore, be regarded from her position. She is gifted with geographical advantages far beyond those of any other naval Power; she has provided herself in the course of ages with outlying bases to meet strategic requirements; and, having no land frontier to protect, can put all her interest into her fleet. There should be no half-heartedness about it; the fleet is for her preservation and not for aggression, and passive resistance is in her case synonymous with ineffectual resistance. Hence we may at once dismiss one detail of compromise—cost.

Having got rid of cost, let us expel another objectionable consideration—the "too many eggs in one basket" idea. Omelettes cannot be made without breaking eggs, and risks must be run to accomplish anything; there let the matter end—at least for the capital ship—and let it be confined to merchantmen and insurance companies, who are not, apparently, timid or nervous, judging by the size of the liner, which *might* at any time become a total wreck as the result of collision or contact with the rocks of the fog-bound coasts she frequents, or fall a victim to fire or the enemy's cruisers. Suffer the, unfortunately real, drawback to the colossal battle-ship to be dismissed for ever, for there is enough requiring thought without saddling ourselves with this spectre. We have to make up our minds to many necessary evils in worldly affairs, let this be one we accept without compromise. If we lose our ship, costing nearly £2,000,000, let us for once put it down to Kismet, and say: "We did our best; it cannot be helped." If big ships are necessary, then we must have big ships.

What a weight is lifted off the mind, and how matters would be simplified if we could dispose of all points as easily!

Much has been written and much discussion has taken place on various themes in connection with Navies, and the subject of this paper has not been neglected; but these matters have generally been treated in an abstract manner without the attempt to arrive at definite conclusions by taking every argument for and against, assessing a value and disposing of it. Most articles are partisan, and an advocate for one requirement will state everything in its favour and overlook considerations in favour of its opposite, thus deciding on the intense value of his own particular fad to his satisfaction but not to that of his opponent. The most reasonable course appears to be to work to the final conclusion and not from it. There are many details in which we cannot but express ignorance; hypothetical values must be assigned to them so that we may obtain some tangible result, and if these suppositious elements are not concurred in, or are proved to be faulty by subsequent experience, then a different value may be attached to the various desiderata, and the whole argument may be revised to meet the altered conditions, and no harm done.

Three ways of investigating a problem are by:—

1. Deductions from facts; giving precise results.
2. Practical experience and experiment; giving more or less concise results, depending on the degree of finality of the experience or experiment.
3. Deductions from assumption; giving results sometimes satisfactory but frequently the reverse.

The problem with which this paper is to deal is one in which the third method must necessarily largely figure, while the information at disposal is so restricted as to lead one to expect little help from the first two methods. For strategy we have some practical experience; for tactics, next to none. Strategy has but altered in degree; the principal factors still exist, substituting fuel supply for water supply as the bugbear of the admiral, to limit his action and the distance from his bases. We do not hear of important cases of shortage of ammunition in the old days, except, perhaps, the battle of Malaga, fought after great expenditure at Gibraltar; indeed, the battle of the Pas de Calais, lasting four days, points to no difficulty in this respect. The huge capacity of the line-of-battle ship was ample for the lengthy engagements of the past. Nowadays the battle-ship is much more limited in supply; but, on the other hand, the modern sea fight will be of shorter duration. A century ago a ship was rendered helpless for want of water; now a battle-ship becomes a floating fort, probably depleted of ammunition, almost at the mercy of the smallest torpedo-boat, for want of fuel. Fuel can, however, be carried to the battle-ship, or she is competent to calculate to a nicety her requirements to enable her to reach a coaling station. Water was not carried to the "wooden wall," and she was entirely subject to wind to allow her to go in search of it. The two conditions are analogous, and many lessons in strategy are to be gained from our ancestors.

For the study of tactics there are few worthy of consideration; difficulties are presented which do not admit of abstract treatment. At the same time, the tactical question affords greater opportunity for conclusive argument, which the natural advantages conferred on either belligerent by relative or geographical position, not to be overlooked, does not permit in the strategical problem. Practical experience is

of more importance for the unravelling of the tactical puzzle, and this we do not possess, as no naval battles have been fought with modern appliances where the conditions were in the least respect equal numerically or as regards the personal element. Lissa was scarcely a modern action; the sea conflicts of the South American Republics give no data; the Chino-Japanese campaign was unequal in every instance; the same applies to the Spanish-American war; and the late war in the Far East, with the unhomogeneous nature of the rival fleets and the dissimilarity in personal ability, gives us little valuable information, except as to what may result from a well-placed shot and the use which may be made of superior speed only under certain conditions. Further, strategy does not require such a large amount of practice to prove the importance of its principles, and theory offers more facilities for the solving of its problems.

In making comparisons there is always a tendency to exaggerate points of resemblance and to disregard points of difference. An attempt will be made to avoid falling into the trap, and, with that aim in view, bias in favour of the merits of one or other of the elements will be eliminated as far as humanly possible. We will start from the beginning with open minds and work to a conclusion with opinions grown in the course of the discussion, when it is hoped some tangible and concise law may be laid down.

The Ship.

It is first necessary to select the ship which is to undergo alteration in order to produce the means of comparison. In a problem wherein compromise lies as the whole gist of the question, it is obvious that the "Dreadnought," in which design it may be said that what has been called the "compromiseless" ship has been most nearly attained, will not do for our purpose. The saving of weight effected by the introduction of the turbine has permitted an excessively high speed—for a battle-ship—with an enormous armament, which would be impossible with reciprocating engines in a ship of the same size. With the great qualities of speed, armament, and armour which she possesses there is, presumably, little room for compromise; further, we do not know enough about the ship or the success of a turbine battle-ship to take her as a guide.[1] After all, it is not of much consequence what type we employ for purposes of comparison so long as the most is made of the dimensions of a ship brought up-to-date in other details. Two battle-ships are to be evolved, one of high speed, the other of large armament. As we require a substantial difference in these items to obtain conclusive results, to judge of their behaviour strategically and tactically, the standard used will be, in the main, the 17-knot battle-ship of the "Majestic" class, with her armour protection brought up-to-date, and such modifications as are practicable to the constructor. It is accepted that secondary armament is to be a thing of the past, ships only carrying the 12-inch gun and the anti-torpedo-attack gun. The abolition of the secondary battery will admit of a re-distribution of the armour according to latter day conception, and at the same time, taking into consideration the present economy in barbette armour and hull weights generally, it will allow two extra 12-inch guns to be

[1] Written before the "Dreadnought's" trials.

mounted in superposed turrets or other means, one forward, the other aft. An almost inappreciable increase in size will bring her length over all to 420 feet. The removal of the superstructure for secondary battery will enable the guns to have an effective arc of training of 270°; that is, from right ahead to 45° abaft the beam for the foremost group, and from right astern to 45° before the beam for the after group. There should be no trouble, in the light of experience of ships of other Navies, in so disposing the guns. This ship we will call "B." The other ship, with which she will try conclusions, we will name "A." She is to have a speed of 21 knots, and to attain this her length is prolonged to 475 feet over all; her secondary battery is removed, and the training of her four 12-inch guns increased as for "B." Her armour will also be distributed in proportion to her length. This ship will require somewhat finer lines, but this is a negligible quantity so far as the present purpose is concerned. She will also be less handy than "B"—a fact which, together with other facts due to her size, will receive attention in due course. In other respects, such as radius of action, ammunition outfit, proportional protection, and so forth, they will be equal. It is true the slow ship would be able, by a slight increase in size, to carry two more guns to avoid the uneconomical single mountings, but this need not affect the general question.

It does not appear necessary to dwell here on the various factors involved by the main differences of the types "A" and "B"; they are minor points correlative to the principal changes, and may be discussed later if desirable.

It is proposed to deal first with the tactical question, then the strategical, as on the conclusions arrived at with regard to the former the strategic problem will to a large extent hinge.

Tactics.

Something has, no doubt, been demonstrated in the naval manœuvres and in the constant fleet exercises which have been carried out; but in the nature of things, the theoretical ingredient must of necessity exercise considerable influence on results. The only possible manner of obtaining absolutely unquestionable data to estimate the relative values of speed and armament is to observe the conclusion of an angagement between two fleets numerically equal and possessing exactly like qualities in respect to the personal element, comprising the same tactical ability and gunnery efficiency, and in every detail akin, except the two under discussion—speed and armament. That is to say, both Commanders-in-Chief are permeated by the same ideas, and each, actuated by the same impulse, would adopt the same procedure as his antagonist under the same circumstances.

Such conditions—Utopian from the point of view of the student of tactics, though hardly so from the humanitarian ideal—are, unfortunately, of an impossible character; so we are compelled to resort to supposition and imagine the necessary circumstances at our disposal for the solution of the problem. We are confronted with a difficulty at the outset by reason of the power which one fleet has of refusing action, or at any rate, of shortening the battle in which strategic or other requirements and events may have imposed the necessity of it taking part.

It seems to be generally accepted that modern battle tactics will be largely confined to movements in line ahead or line of bearing; that

complicated formations will give place to these simpler formations. The objects aimed at are:—

a. The employment of such evolutions as will allow the greatest advantage to be taken of gun-power,—and in this are included the sun and weather conditions.

b. The concentration of a large proportion of force on smaller portions of the enemy with a view to destruction in detail —no other than Nelson's tactics of long ago.

c. The keeping out of torpedo range on the part of the superior fleet, and *vice versâ* the attempt to get within this range on the part of the weaker adversary which sees defeat impending.

The Single-Ship Action.

It would be advisable to first consider a single-ship action, in which a ship from each of the fleets is engaged. Here the object (*a*) is all important, (*b*) does not apply, while the practical value of (*c*) is dependent almost entirely on the success in attaining, and the outcome of, (*a*), for the faster ship only is likely to achieve it, and then perhaps only as a last resource.

While the "B" ship has any steerage way the "A" ship will find it impossible by her manœuvres—neglecting outside influences—to secure any advantage in respect to preponderance of gun power. When she, steaming at top speed, attempts a movement which will bring all her guns into action, the "B" ship, with a small touch of her helm, attains a similar advantage, and the fight resolves itself into the two ships following on concentric circular courses, with the slow ship on the inner circle, where she, to all intents and purposes, becomes a fort revolving so as to maintain a constant hail of projectiles on the enemy, whose destruction, so long as she continues this procedure, is only a matter of time.

But it is necessary to estimate the result of an action between two ships placed at various relative positions to one another, other matters —such as weather and sea conditions—being left out of consideration. Two points have to be taken into account. These are: the guns bearing in the two ships, and the virtual targets offered. The former requires no calculation, but can be seen at a glance, but its value will be governed by the virtual target, which we will call the "exposure." It is found that at 4,000 yards the difference of virtual targets, reckoning with danger space, of the two ships end-on is 225 feet, and at 10,000 yards it is 825 feet; therefore, it is for "A" (which, being faster, has the choice of range) to fight at a moderate distance. She consequently selects one well outside torpedo range; say 5,000 yards. For this distance our calculations will be made.

For the Broadside Position.—"Exposure" is calculated from the virtual target presented by the hull, allowing a deduction of about one quarter for the armour surface, which will be invulnerable at the range, and an addition of about 3,000 square feet for the target offered by the superstructure, turrets, conning-tower, masts, funnels, and other shell-bursting objects. This latter component we may name the "excrescence," an unavoidable factor through the necessity for mounting guns high, and the conning-tower and protection of armament are included for the reason that, though they will not be pierced, a bad

effect on *moral* will doubtless be occasioned, with derangement in the working, by the shock of impact. The "excrescence" element is considerably reduced by the abolition of the secondary armament. It is taken to be approximately the same in the two ships, as the extra surface entailed by the heavier armament of the slow ship will probably be met by other shell-catching objects, together with the raised forecastle, required in the fast ship. With these allowances, and using the proper angle of descent, we get:—

"A's" "exposure," 15,600 square feet.
"B's" "exposure," 14,200 square feet.

For the Four-point Position.—Here the impact will not be normal, but in view of the introduction of the capped projectile it is not proposed to take this fact into account. Applying the cosine of the four points to the deduction and addition due to invulnerable armour and "excrescence" surface, we get:—

"A's" "exposure," 12,300 square feet.
"B's" "exposure," 11,100 square feet.

For the End-on Position.—The target offered by a ship end-on is obviously much diminished by the great proportion of projectiles which strike glancing blows rendered ineffective, notwithstanding the use of the cap. Shocks of impact on the side of a ship, accompanied by no damage, are not likely to exercise the bad influence on the *moral* which would be occasioned by a projectile striking the deck or "excrescences" of a ship. It is judged that at a rough estimate two-thirds of that portion of the virtual target represented by the hull proper is open to impairment through the fire of the enemy. 1,000 square feet is taken as the addition due to "excrescence"; it would probably be more, but a large amount is covered by the height of the virtual target resulting from the length (34·75 feet in the case of "A"). At the range fixed we get:—

"A's" "exposure," 5,100 square feet.
"B's" "exposure," 4,800 square feet.

It may be objected that for purposes of comparison these "exposures" are not satisfactory because of the equal value assigned to the height and the length in estimating the target. It is known that more vertical than lateral errors occur in gun practice, the difference being principally due to the motion of the ship and incorrect distances. With modern range-finding capabilities, however, it is maintained that the difference will not be of such great importance, many factors arising to nullify the effects of inaccuracy in elevation. Let us weigh them in the balance and see if equi-values are not feasible. For height we have:—

Probably more hits, more damage to deck, more damage to *personnel*, less accuracy of range required, less effect on shooting caused by motion of ship firing.

In favour of length:—

More damage to ship's structure due to greater selection and larger surface searched, greater extent of water-line exposed, more damage by shots striking normally, glancing impact eliminated; firing would probably be more rapid through less attention being required for direction. Errors in deflection and direction through alterations of course and

speed not so important.[1] A roll exposes more surface than a pitch. Modern accuracy of range-finding.

Were a flat target only under consideration, several of these points would not apply, and should be left out of account; but as a ship constitutes the target they cannot be disregarded.

With the foregoing various advantages and counter-advantages, it appears justifiable to consider the two dimensions on an equal basis, and to avoid differentiating between them in comparing exposed areas.

If absolute perfection in shooting were attained,—that is to say, were a gun to secure hits at a target of sufficient size to take all the projectiles fired at it during the action,—the value of "exposure," outside these limits, would be a negligible quantity. Such, however, is not and can never be the case. There is, consequently, a connection between gunpower and "exposure," the former being governed by the latter. It is manifest that the limits within which the comparison of "exposure" and gunpower can be mathematically treated are soon reached, and the higher the accuracy of shooting the greater the limitation. With the perfection in modern gun practice, the "exposure" factor has been greatly reduced in importance compared to the old days of smooth-bores, when ships lay with their muzzles almost touching, and Nelson's pet signal was: "Engage more closely." If a target were of such dimensions that gunnery efficiency would be confined to rapid shooting only, no misses being scored, the importance of this factor would quickly increase as the size of the target decreased. In modern shooting, once the maximum rapidity of firing is attained, consistent with the same hitting competency as obtains at the smaller target, the further increase in the dimensions becomes of no value whatever; so that with the method adopted for comparison, the present high gunnery proficiency renders it desirable to, as it were, put a check on the value represented by size of target as that size increases. This resolves itself into assigning a value to "exposure," the coefficient of the gunpower, for the different targets presented by the various positions of the ship.

With a practice target of 2,700 square feet at long ranges, we know—all the world knows—what marvellous results have been obtained at battle practice. These must form a rough basis on which to acquire some figures as means of comparison.

The smallest target we have to deal with in the contest between battle-ships is that presented by "B" in the end-on position, viz., 4,800 square feet, or 1·77 times the size of the practice target. But battle practice is conducted in peace, when men are less excited than they would prove in war (though it must be conceded that much nervousness must be induced by the anxiety of competition, with many eyes on the gunlayer), and there is an absence of casualties. Is it not, therefore, under the altered conditions, reasonable to eliminate the fraction and assume that 2,700 square feet in peace is equivalent to 4,800 square feet in war?

It is difficult to draw conclusions from fleet results. It might be argued that the best ship ought to be taken as the standard, as what can

[1] Apart from definite alterations of course, a ship will be constantly yawing and making slight turns for the purpose of station-keeping; where the broadside of an enemy represents the target, the resultant interference to shooting is much reduced, but when the target is a ship in the end-on position, this fact would be of considerable importance to the gunlayer.

be accomplished by one ship can be accomplished by others; but the personal element here intervenes. Just as every officer cannot be a Nelson, who may be considered the standard for admirals, so every bluejacket cannot be the best shot in the fleet, the standard to be aimed at by them. The proficiency of the best ship can never be reached except by the best ship. For our purpose a middle course has to be adopted; so, with an eye on results obtained, let us take, for the range of 5,000 yards and with the target of 4,800 square feet, a half as the ratio of hits to shots fired. This will give the co-efficient of the gun-power (the guns which bear) of the ship firing.

The largest target dealt with in our problem, that presented by "A's" broadside, is 15,600 square feet, or $3\frac{1}{4}$ times the smallest. It is evident that the ratio of hits to shots fired cannot be increased by this multiplier, as more hits than shots fired is an impossibility. The best that can be done is to score no misses, and that gives unity as the factor of the gun-power of the ship firing. Working in proportion, we get the following co-efficients to apply to armament, this being, of course, constituted by the number of guns which bear in the respective ships in the various positions, viz.:—

A as target;	broadside "exposure"	15,600	Co-efficient	1.
	at four-points „	12,300	„	·847
	end-on ... „	5,100	„	·514
B as target;	broadside ... „	14,200	„	·935
	at four-points „	11,100	„	·791
	end-on ... „	4,800	„	·5

e.g., "B" is end-on to "A's" broadside; "B" has three guns bearing, which, multiplied by co-efficient 1, gives 3 as "B's" gun-power. "A" has 4 guns bearing, which, multiplied by co-efficient ·5, gives 2 as "A's" gun-power.

Similarly, supposing they are broadside on to one another, "A's" gun-power is 3·740 and "B's" gun-power is 6.

With "A's" four-points exposed to "B's" end-on, "A's" gun-power is 2 and "B's" 2·541. It will thus be seen that this latter is the most advantageous situation which "A" can assume with reference to "B." It is therefore undebatable that there is no alternative to her taking up this position, provided no other influences are at work and she intends to fight. The question is: Can she make moderately certain of securing, with her superior speed, this comparative advantage? The answer is in the negative, for the reason that "B," with her great armament, will desire battle above all things, and will anxiously head to cut the enemy off, and make sure that she will not be eluded, and so bring all her guns to bear. If "A" were to adopt the necessary position by altering course alternately to starboard and port while rapidly closing to her range of 5,000 yards, movements which will bear the semblance of the design to escape, she would be interfering with her own fire. Any position which would allow "B" to bring all her guns into action, or any position which would prevent "A" from bringing all her guns into action, would enhance the degree of the balance of power. The former she can do by bringing "A" four points on her bow, thereby making her gunpower 5·082 to "A's" gun-power of 3·164; the latter she is powerless to prevent.

After her arrival at the desired range, can "A"—imagining her *personnel* to be superior—obtain any advantage? If she turned and pursued the same system by presenting her quarter, "B" could gain on

"A" rapidly; but she is hindered by the fear of torpedoes fired at a converging ship, which will have no terrors for the leading ship (now "A"). The only thing for "B" to do is to present the bluff of her bow and secure an advantage over "A" of 5·082 to 3·164, rendering "A's" position untenable. With respect to gun-power, "A" has made the most of it and shot her bolt in the approach; it is impossible that she can gain any advantage. During this period—five to six minutes—taking the rate of fire on service as 3 rounds in 2 minutes, or 1½ rounds per minute, we find that "A" has been hit about 38 times, and "B" about 24 times.

Regarding the question from the gun-power standard only, "A" would be merely throwing herself away by remaining in the presence of her powerful adversary; she would therefore be wise to move off. It may be shown—lack of space forbids the details—that by "B" presenting her four-points to "A" in her retreat, "A" is punished so severely as to render escape quite unjustifiable, and the only course left open to her is the torpedo attack. "A" is in an awkward predicament: retreat spells defeat by means of gunfire, and "B" may avoid a one-sided torpedo onslaught by bringing "A" abaft her beam. "A" must not keep a parallel course to "B" (abaft her beam), for she would be at a gun-power disadvantage of 3·164 to 5·082; she imperils her one asset, speed, by having her bow pierced, and she is subject to run foul of "B's" torpedoes—a risk which would be intensified by her endeavour to secure a reduction of the gun-power advantage in "B's" favour to 2·541-2. She is, in fact, driven to resort to the last hope of the desperate, that of dragging her adversary down with herself in a *mêlée* of guns and torpedoes let loose at close quarters, from which it is unlikely that either ship will escape, an issue which "B" could have averted had she possessed "A's" speed.

The "Three S's."—Elements which have so far been neglected in this paper are the "three S's"—the Sun, Sea, and Smoke, the modern interpretation of the weather-gauge.

The only considerations which induce a unit, be it ship or fleet, to fight a superior unit are:—

1. That important strategic advantages may result, whether it suffers defeat or not.
2. Confidence or hope of superiority in the *personnel* constituent to compensate for inferiority in *matériel*.
3. The advantageous employment of the "three S's."

In the tactical problem we may disregard 1 and 2.

In the engagement between our supposititious ships "A" and "B" we have established a kind of equality, for it has resulted in the loss of both ships. Let us continue the research and enquire into the effect of the "three S's," with due consideration for the facilities offered to the ship of greater speed to utilise them, or to postpone action should temporary conditions render the occasion inauspicious.

It appears that we may reasonably concede to the fast ship the faculty of obtaining, by virtue of her superior speed, any advantage which might accrue by the selection of the most suitable position relative to the sea, wind, and sun, with a view to the beneficial use of motion, the rapid dispersal of smoke, and the avoidance of glare respectively. Whether this collective advantage will remain during the fight—the tactics of the slow ship, with the object of reversing or

annulling it, not being totally without avail—or whether the fast ship will seek to maintain it at the expense of some other benefit, are questions of difficulty. The "three S's" do not go hand in hand; one may exist without the others, while two out of the three may act in contrary directions, and both ships might thus profit to some degree.

Apart from the effects of spray as a deterrent, which may be, except under extraordinary circumstances, neglected where there is no secondary armament and guns are mounted high, the ship holding the lee-gauge profits by the wind blowing the smoke from her artillery and funnels clear away to leeward; but she has a less definite target in the ship to windward hidden by her smoke, and has a further set-back in the reduced rapidity of fire through back-flame caused by her guns being pointed to the wind, so that the lee-gauge is not an unmixed blessing. Nevertheless, it is likely to be aimed at so long as a heavy sea is not running, as, on the other hand, the smoke from the guns and funnels—and especially the funnels—of the ship to windward covers her target and obstructs her view, so interrupting fire to a greater extent.

It may be conjectured, as an instance, that a ship with a preponderance of speed is competent to choose the time of day when the double advantage of wind and sun, acting in conjunction, could be obtained; and, in latitudes in which our battles will presumably be fought, the prevailing easterly or westerly winds, depending on the season, make this a very possible combination. The proposal is that this has been secured by "A" for the initial stage, during which admirals hope to ensure victory by the smashing effect of heavy ordnance on the first encounter. Given the importance of this benefit, it is necessary to assess a specific value to it. To make the most of it, the time chosen by "A" would be when the sun is fairly low, though she need not be absolutely confined to this condition, as if the sun himself is not in or near the line of fire, the light reflected from the water may be. What would be the effect of glare on "B's" gunners? Experience teaches us that it is very considerable, but no figures are at our disposal for its definite measurement. Would we be guilty of exaggeration if we supposed it to reduce "B's" hits by ·4? It appears that at the long ranges of modern actions we are justified in assuming this result. It should be remembered that the effect will be governed to some extent by the sun's motion in altitude, but the fast ship will be in a position to prolong the advantage as long as the sun affects the shooting, and in our latitudes this period will certainly suffice for a decisive result.

In estimating the outcome of smoke it may be said that the time it takes to clear away does not vary to any great degree, for with a light breeze the smoke rises above the line of vision, while with a strong wind blowing it is not allowed to rise, but becomes quickly diminished in density and dissipated. Smoke will be dispersed by the time it reaches the lee fleet from the weather fleet, but it will be interrupting the view of the weather fleet during a part of its passage. Judging from our experience in gun practice, we conclude that from this cause the gun-power of the ship to windward—not forgetting some slight allowance for back-flame—is reduced by ·2. This is somewhat arbitrary treatment; but in an argument where so much is based on assumption there is no remedy. Quantities acquired by this method are open to revision, and the argument to be altered accordingly; but it is hoped not in substance.

The effect on the ship to leeward is not so great, for her smoke is immediately driven clear, and the enemy, even if entirely enveloped, has her position indicated by the smoke and still offers a target. The presence of this element, in so far as the ship to leeward is concerned, may therefore be disregarded. Hence the fast ship has the advantage over the slow of 1 to ·8; the effect of the sun is to confer an advantage of 1 to ·6 on the former; and the combined effects of smoke and sun give 1 to ·48.

This very material difference is valuable enough to merit manœuvring for, and, given sufficient sea room—which the fast ship would make sure of when choosing the time and place of battle—is possible to be secured by "A."

Another detail—the third "S"—which the fast ship can, also to a limited extent, govern, is the roughness of the sea, conferring the advantage of a steadier platform and less exposure of bottom on the ship which can assume such a position that her opponent is beam-on, while she herself is end-on, to the waves.

Neglecting a further consideration, the benefit which the ship to windward may derive in a heavy sea,[1] there is some uncertanty with regard to this element. The advantage to the ship end-on may be only small, or it may not exist at all owing to a smooth sea, while it is not considered likely that an admiral will go out of his way to bring on an action in really bad weather, though, on the other hand, it may be unavoidable, as at Tsushima.

The swell is, nevertheless, too powerful a factor in an action to warrant its complete neglect. A ship end-on to it is steadier than a ship beam-on, and her shooting is less affected by vertical errors; but, on the other side, the height of the virtual target offered by the steadier ship is greater than that offered by the rolling ship; whence we arrive at a factor (a), the increase in the value of the height of the target. If both ships are still, and "A" is end-on to "B's" broadside, our calculations, based on the virtual target, give "A's" gun-power as 1·870 and "B's" as 4·084: a preponderance against "A" which renders this position prohibitive to her. But two ships may have positions relative to the swell without occupying the same relative position to one another, so that a ship with the advantage of lying end-on to the sea need not necessarily labour under the disadvantage above instanced.

The suggestion, based on Alger's tables, has been made that the offensive power of a ship rolling twice as much as her opponent is half as great as the offensive power of the latter; but this applies to the case in which they both have the same relative bearing to each other. The difference would be augmented by a second factor (b) that the heavier roller is offering a larger vulnerable target by the additional exposure of her bottom and deck alternating. It would simplify

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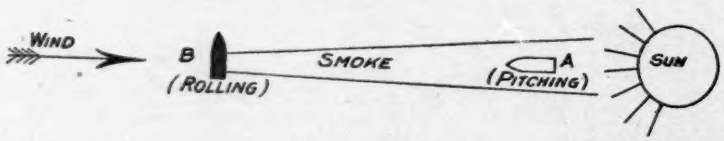
[1] After the battle of Tsushima rumour had it that the Japanese derived some benefit by taking the *weather-gauge* in a heavy sea. It is presumed that under the conditions prevailing this benefit overshadowed the smoke factor, or the two were not acting in exactly the same direction, the latter being thus eliminated. It may be conceived, therefore, that where the sea is so formidable as to demand attention, the fast ship will be able to make better use of it than of the smoke factor. It is convenient to class the two as of the same value, viz., the lowest in the "S" scale.

matters if we could eliminate (*a*) and (*b*). We accordingly do so by arguing that these two factors are rendered equal and opposite by the further consideration that the pitching ship is not precisely steady, and that in a sea way the steadier end-on ship's disadvantage of offering a higher virtual target is compensated by the broadside ship's disadvantage of offering a greater surface as she rolls. What remains? The above suggestion, revised, that if the latter is rolling twice as much as the former is pitching, then at long ranges the latter's gun-power is reduced by twice as much as the former's. Complications are still by no means absent; the degree of difference will depend on the state of the sea. The choppy, confused sea will affect rolling more than pitching. Only practical experience, gained by the firing of men of exactly equal capacity, can decide the matter; we must again have recourse to arbitrary methods. Let it, therefore, be assumed that our purpose will be attained by assessing for a ship broadside-on to the swell a co-efficient, to apply to the gun-power, equal to that for smoke, viz., ·8.

We see, then, that, adopting these standards, the "three S's" combined could reduce a passive ship's gun-power by a co-efficient of ·8 (for smoke), by ·6 (for sun), by ·8 (for sea) = ·384.

To take a specific case: "B" is lying broadside to a swell raised by a westerly wind, still blowing, shortly after sunrise; "A" is distant 5,000 yards to the eastward and head to wind. Here all the "S's" are in their acutest form (except that "A" loses some of her power through being end-on to "B" in order to prevent herself from rolling) against "B," and we find her gun-power to be reduced to 6 by ·514 by ·384 = 1·185, while "A's" is 1·870. (Fig. 1.)

FIG. 1



"A" has manœuvred for this time and position; without her superior speed she could only have secured the advantage by chance.

Would that these data were mathematical realities; it is a thousand pities we cannot test by practical experiment the accuracy of these deductions. If two ships with gunners of equal efficiency could be placed in the foregoing situation to hammer away at one another to the death, what valuable information would be obtained.

We have, however, imagined an extreme case, where one of the belligerents is passive. The inference will now be applied to the single ship action, in which "B" will attempt to counteract "A's" advantages gained by the "three S's."

The most important of these for "B" to avoid is the sun; but this it is impossible for her to do, for, any turn she may make is followed by a similar turn by "A" to preserve the compass bearing, accompanied, it is true, by deprivation from "A" of the sea advantage, but not the smoke. Finding she cannot get away from the sun, "B" next tries to counteract the sea factor, it being no more feasible to avoid the smoke than the sun. She can succeed in this by placing herself end-on to the enemy, when the sea factor is eliminated for both; or she can present her four-points position, "A" following

suit so as to preserve the compass bearing. So long as "A" shows no signs of retreat, "B" will present her quarter so as to escape the torpedo danger; but "A" might suffer from this source of disaster thereby, so is compelled to turn and head four points from the sun, and "B," fearing to be eluded, must turn to a parallel course, thus equalising the sea element for the two ships and leaving the sun and smoke in "A's" favour. The respective gun-powers then are, "A" 3·164, and "B" 2·439. By no means whatsoever can "B" improve on this preponderance against her, which spells victory without the loss of her ship to "A's" country, and the sun would not be very high in the heavens before the battle has culminated in this result.

But, it may be asked, are we likely to find a combination of the "S's" exerting their influence all three in one direction? In the latitudes where our battles with the great naval Powers of the future may reasonably be expected to take place, with prevailing winds west to S.W., and easterly, according to the season, we might anticipate—with rising or setting sun, or the glare at a higher altitude reflected by the water—that they will act so that they will not, at any rate, be contrary to one another; for example, sun and wind both westerly, giving one ship the advantage as regards smoke, and the disadvantage as regards sun. Further, if the fast ship is unable to secure favourable conditions, she is at liberty to wait, and, if a westerly wind is blowing she can start the contest in the morning; if easterly, in the evening.

However, as the sun is frequently hidden by clouds when near the horizon, and a bright day is often a calm day, it may be as well to carry the investigation a little further.

To avoid the corkscrew motion, which would retard gunnery, caused by steaming with the bluff of the bow to the swell, "A" would approach from dead to leeward of "B," which ship would, in order to escape the rolling, place herself head or stern to wind, probably steaming towards "A" for the first few minutes till she is satisfied that the latter does not intend a retreat. She is unable to nullify the smoke difficulty, for "A" is in a position to preserve the bearing, and any alteration of course would tend mutually to sea disadvantage; a manœuvre on her part to bring all her guns into action would be met by the same tactics in "A." The two ships will take four minutes to arrive at the 5,000 yards range; during that interval "A's" gun-power is 2, and "B's" is 3 by ·514 by ·8 (smoke) = 1·233. "A" is hit 7·404 times, and "B" 12 times.

If "A" turned four points to bring all her armament to bear, "B" would do likewise to cut off "A" and continue the fight as long as possible; both ships are then affected by sea, and "B" by smoke as well, so the gun-powers are: "A," 4 by ·791 by ·8 (sea) = 2·531, and "B," 6 by ·847 by ·8 (sea) by ·8 (smoke) = 3·252.

Supposing "A" approached on the course four points to "B's" bearing, the latter keeping head to sea; the ships would take about five minutes to reach the 5,000 yards range, during which time "A" is hampered by the sea factor (taken to be the same for four points as for eight points, in view of the irregular corkscrew motion), and "B" by the smoke; which makes "A's" gun-power 1·6, and "B's" 2·033, "A" receiving 15·247, and "B" 12 hits.

It is seen, therefore, that under these "S" conditions "A" can only reduce "B's" advantage due to heavier armament; she can never

confer the advantage on herself. "A" is unable to do any better on the 5,000 yards range being reached, so is again compelled to resort to the torpedo, with, again, passably equal results, by the sinking of both ships.

The appreciable time of turning, involving loss due to sea, would necessitate "A" continuing her course and making her torpedo attack instantly.

As there are many fine days in the year, after all, and these occur at the season of long duration of daylight (an important consideration when we reflect upon the fact that battle-ship actions will not, probably, be fought at night, and that the fast ships will require time to manœuvre for position), and the faster ship will have a good deal to say to the selection of the duelling ground, we will next judge the effect of sun only on our single ship encounter. Once this advantage has been gained by "A," no movement by "B" will prevent her retaining it. Finding the sun in her eyes, and with no means of getting it out of them, "B" would not be so very anxious for the meeting, and, therefore, "A's" approach to 5,000 yards may be accorded the reception most convenient to "B." Hoping to keep to some extent out of the line of the sun, she would at first alter to the opposite direction to that in which "A" heads, turning to starboard when "A" turns to starboard, and *vice versâ*, while "A" takes care not to stand long enough on one course to lose the sun advantage. Thus the two ships will have their respective four-points presented to one another, and the gun-powers will be, "A" 3·164, and "B" 3·049. They will be about six minutes advancing to the range prescribed by "A," and in that interval "A" will have been hit 27·441 times, and "B" 28·476 times, which shows a very equal result. How will the remainder of the action be carried on? "B" would present her quarter to "A's" fire and continue in that disposition till "A" showed signs of retreating; by this means "A" would be subjected to the torpedo-attack-without-retaliation danger, she consequently turns about and proceeds on a course towards the sun with either quarter offered to "B," which ship would doubtless follow on pain of discontinuing the battle, the gun-powers remaining the same as during approach. Nearly an identical result would be obtained if "A" eased down during the approach; her speed would still be a potential element used as necessary to keep the bearing of the sun. As the range would, in this case, be longer over 5,000 yards, for which distance the virtual target formulæ have been determined, and the greater the distance the more the long ship is affected in this respect, "B's" gun-power will be slightly increased, and the small inequality (3·164/3·049 in "A's" favour) removed.

Here, then, in the instance of the sun factor, equality in gun-power is established and actual torpedo warfare discarded. In the former cases discussed an indirect equality was instituted by the assistance of the torpedo, but it was shown to be only possible to push home the attack by virtue of the possession of speed, heavy guns, and armour, wherein lies the distinction between torpedo assault by the torpedo craft and the battle-ship. The former, having speed only, finds it impossible to get within range by day; the latter can do so.

The question, as applied to single-ship actions, appears to resolve itself into this:—That, given two ships of unequal speeds and of such armament as their capacity for these speeds permits, *to beat* her rival

the faster ship must wait to reap full advantage from the "S's," or she must have greater torpedo armament; and the small additional weight which this increment entails is not of serious moment, while the necessary space is provided by the extra length which speed requires. The prospective advance in the torpedo emphasises the importance of this finding.

Exception might be taken to the method of comparison in the foregoing discussion, in that while exact factors appertaining to armament have been used in the ratio of gun-powers, no precision is employed in estimating the effects of the difference in speed, except in calculating the period of fire and the consequent number of hits, as in the approach to 5,000 yards range. This may seem all the more unwarranted when the fact of the sacrifices in other directions rendered necessary by the last one or two knots of the extreme speed is taken into consideration. In palliation, however, it should be remembered that though a small difference in speed suffices for preserving a bearing—for maintaining the sun advantage, for instance—once the ships are in touch, the same small disparity will not be of avail for the initial manœuvring for position, or for the rapid approach essential to the fast ship when her gun-power, through absence of sun, is disadvantageous to her. For the latter we could calculate the speed necessary if we knew how many hits are required to disable an opponent; if we possessed this knowledge the problem would be simplified. For the former, an extreme case will be assumed, in which "A" is overtaking "B" steering west, and wishes to secure a position to the west of "B" before coming within shot. With her preponderance of four knots this will take her seven hours, which, added to the time required for the fight, is well within the limits of daylight; with a preponderance of only two knots the time would be practically outside the limits.

The Fleet Action.

Fights between single battle-ships will be the exception; they are intended for collective struggles, and there is an improbability that individual contests unhampered by the presence of the fleet will occur. It is proposed, therefore, to ascertain the issue of a battle between fleets composed of the types of ship we have been employing, each fleet containing, say, twelve ships. With different speeds and armaments, in other respects the two fleets are equal. The same gun-power and "exposure" quantities which were used for the single-ship action will be adopted here.

Disadvantages have been claimed against the line ahead; for example, that ships are helpless against the ram unless they turn and thereby derange the column; that the maximum length of waterline, and maximum torpedo target, are presented to an enemy on the beam; that damage to an individual ship influences the whole line. But will not all or some of these considerations affect other formations? It appears that any such disadvantages which exist are fully compensated by simplicity in manœuvring and in signalling. A paper on the "Organisation of a Modern Fleet for War," recently read at the Royal United Service Institution, warmly advocates the single line ahead.

In our problem, an advantage of superior speed having been conferred on one fleet at the expense of armament, which allows it, in a

large measure, to choose its own tactics, we must see how it can do so with the greatest gain to indemnify it for the inferior hitting qualification. Does the introduction of the heavy armament and the absence of the secondary battery in the latest designs, as exemplified in our hypothetical ships "A" and "B," where the fire is not all concentrated on the beam, cause any alteration in the line ahead, modified, as necessary, by the line of bearing? The relative position of a target, unable to bring its complete armament into action, which confers the greatest advantage on a ship of this description, is that in which the target is about four points before or abaft the beam; and this applies in the same way to the fleet. Can this advantage, once obtained, be preserved by a fleet in line ahead? Yes, if the target is immobile, by circling round on a large circumference, and alternately presenting the bow and quarter in order to maintain the range. What happens if the target is at liberty to move and bring all its guns to bear? The single ship and the fleet are alike powerless to prevent it; but they can equally keep the target on the same relative bearing. Is the fleet in line ahead with its beam presented to the mobile target equally powerless in this respect? Yes. Well, then, what benefit accrues to the fleet through its four-points instead of its beam being presented to the target? It exposes its own smallest target, consistent with high gun-power, regardless of the surface offered by the object, and if of less speed than the target it keeps it within range longer. If the target is represented by another fleet, and neither wished to avoid battle, what shape does this discussion take? The fleets will proceed on parallel courses; if the speeds were equal, the fleet with the enemy on its quarter will continue the course and acquire the following advantages over its rival:—

1. It can fire torpedoes, which would otherwise be out-ranged, with some chance of success on account of the convergence of the target to the torpedo;
2. It can lessen the distance, if necessary;
3. It is in position for "crossing the T" and concentrating fire on the leading ships.

In view of these conditions in its antagonist's favour, the other fleet will turn gradually eight points away in succession, and so secure the same advantages for itself (not being able to make the turn towards the enemy with the object of "crossing the T" astern for fear of torpedoes). The fleet which first had the advantage must either alter course the same way, when it would be subjected to the torpedo danger, or it will hold on its course, when, neither fleet being disposed to accept the adverse circumstances, and consequently neither being able to continue in the possession of the advantages, the action will resolve itself into a bombardment with the fleets abeam of one another in line ahead or line of bearing; each endeavouring to obtain some opening as the disablement of the opposite ships progresses. Or the action would cease altogether as the range increased.

If, however, one fleet were more powerful in armament, though having equal speed, this fleet would not suffer such a result to occur, but would see that the fight was carried on at all costs; this would allow the other fleet to present its quarter, and the action would be continued at longer range—which the fleet in rear regulates—to avoid torpedo attack. Nevertheless, our problem has not to do with equal speeds and unequal armaments, but with disparities in both details.

Hence it is seen that the provision of guns of large angle of training does not materially alter the value of the line ahead formation. When two equal fleets are in line ahead, and one four points abaft the beam of the other, the only possible advantages on either side, as far as gun-power is concerned, are:—

1. That the leading fleet can concentrate its fire on the van of the enemy, while the latter can only concentrate on its adversary's rear; it being considered that damage to leading ships exercises more influence on an action than damage to sternmost ships.

2. The leading fleet has more facilities for reducing the enemy's speed by piercing his bows.

But, as already indicated, it is open to the fleet most disadvantageously placed to turn the tables at will. The greater the difference in speed and the smaller the range, the greater the danger of the slower fleet being forced to double up in the counter-movement.

Modern tactics may be said to consist in securing as much as possible from the "three S's" and manœuvring room; line ahead and line of bearing movements, with the aim of heading off or engaging small portions of the enemy with overwhelming force; seizing opportunities offered by the errors of the opponent; all with the minimum of interference of fire.

Any benefit to be derived from the "S's" by ships of equal speed will be a matter of chance, for it must necessarily be contested in the preliminary manœuvres. If the sun, say—the most important of these elements—were in favour of one fleet when its masts were visible over the horizon, it could not approach within fighting range, while preserving this advantage, without the consent of the enemy, which has merely to steer a course at right angles to the sun to prevent it.

The only event which will permit an overwhelming concentration of fire on a portion of the adversary is bad station-keeping, whereby a column is prolonged. With the high velocity weapons of modern times, and the ease with which close order may be maintained, the value of concentrated fire has considerably diminished—or, rather, the difficulty of ensuring it has considerably increased—compared with the old days when the rear of a line was quite out of range of the enemy bombarding the van. Supposing two fleets in line ahead, one four points before the beam of the other, and 5,000 yards from centre to centre, the ships in column being two cables apart; the distance from the first ship of the leading fleet to the rearmost hostile ship is under 9,000 yards. Thus the rear ships, not being under fire, would be able to carry out steady shooting at long ranges, as if under peace conditions; while their opponents are handicapped by casualties and the effect on *moral* in a mutual *battue*. A fleet having the idea of destroying the enemy in detail by applying an overwhelming force to a section at a time, must select a distance suitable for the pursuit of these tactics. It has been shown that a short range does not favour the achievement of this task. A desirable distance is that which places one end of a column out of, while leaving the end to be attacked within, effective range. For our purpose we will take 10,000 yards to be the limit, and the fire to be concentrated on the van, there being twelve ships in each fleet.

Single line ahead will only be of use if steering across the enemy's course; it will be practically useless for a parallel course, for, what applies to one fleet applies to the other, except the possible advantage already stated, which may be gained by damage to the head instead of the rear of a column. It cannot be expected that less than two-thirds of the fleet attacked in detail will be under fire, while the remainder is out of range, nor that a preponderance in gun-power will be obtained by relative position, ship to ship. To secure the former the concentrating fleet must, if steering the same course as the enemy, assume line abreast formation; it will then be found that if the last four ships of the fleet in line ahead are just out of range, the distance apart of the nearest belligerents will be 5,500 yards, and the furthest within effective range, about 9,500 yards; that is to say, twelve ships in line abreast can fire at six ships of the enemy with reasonable chance of doing considerable damage at ranges from 5,500 to 9,000 yards, while only eight of the other fleet can be brought into serviceable action.

This disposition is so disadvantageous to the fleet in line ahead that it would be avoided; in fact, the latter would never allow it to occur. It may be neutralised by turning eight points in succession, which will necessitate a similar manœuvre by the concentrated fleet, bringing the rivals on parallel courses, and, again, the single line ahead formation is assumed.

It appears, then, that single line ahead is the accepted order of battle of fleets of equal speed, and that this formation will be eventually pressed on either fleet which attempts an alternative plan. This truth may, of course, be modified by influences external to the battle fleet, such as torpedo-craft operations, land configuration, and so forth; but such influences do not so far weigh upon the problem. The main idea will be to cause the enemy's fleet to double up and mask his own fire by flanking, or "T-ing" his line, and this, neglecting outside assistance, is avertable.

This being the case with equal speeds, we will determine how the matter is affected by the possession of different speeds by the respective fleets containing ships of the "A" and "B" type. At the outset, the same factor exists in the fleet problem as in the single ship action, viz., the anxiety with which "B," aware of his opponent's high speed, will close with "A," conscious of "B's" superior armament, to make certain of battle taking place. Similarly, the "three S's" element will be "A's" occasion for watchfulness. The latter will be left out of consideration for the present.

If the speed of "A" were excessively high, and its turning power intensely rapid compared with that of "B," the former would always be able to so place itself that it secured the full advantage of "exposure" and gun-power; it could flank "B" at will, for the latter could not turn soon enough to prevent it. With no difference in these details we know that movements conducted with these objects may always be met by counter-movements. As it is, however, "A" has only a limited preponderance in speed, and we must, therefore, inquire into the result of an intermediate condition due to such disparity "A" will try the flanking evolution. He has, to begin with, a subsidiary advantage owing to his superior speed, which ties "B" down to doing all in his power to bring on the action, and consequently to steering for "A." Both fleets will approach in line abreast or quarterline. When at 5,000 yards "B" has attained the primary object of ensuring battle, and will then be at liberty to

pursue any advantage which might accrue. The fleets will bring themselves into line ahead on parallel courses by turning together towards the same direction. "A" will try and flank "B," and "B" will try and prevent it, the ratios of gun-power being in the meantime 3·740/6 or 3·164/5·082, in "B's" favour (the former if the fleets are abeam of one another, the later if at four-points).

"B" is too well satisfied with the position of such benefit to wish to alter it, and thereby risk losing touch with "A," which, with superior armament, is the principal eventuality "B" would require to avoid, and he would not be justified in turning away from "A" unless the latter also turned. This is a most important element in a contest between fleets of equal speed also. Without external assistance the only means at the disposal of "A" for the attempt at outflanking are:—

1. Turning *together* towards "B's" van, but sufficiently ahead of him to render the movement before the beam progressive;
2. Remaining in single line ahead.

1. If "B" held on he would be finally outflanked at the head, but in the interval "A" would be subjected to heavier gun-fire. "B" could only be compelled to keep the same course by external

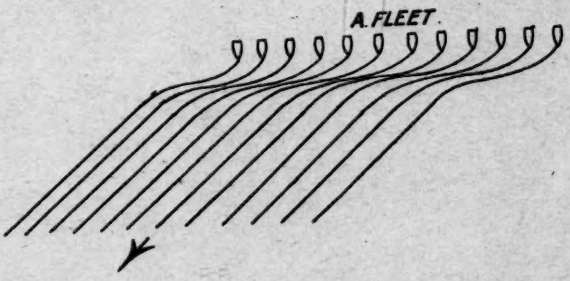
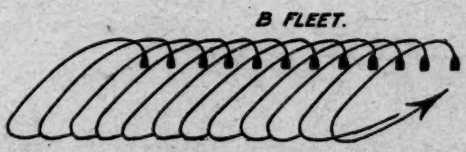


Fig. 2.



influences, such as shallow water, or land, on his other side; otherwise, he will merely turn together away from "A" and institute the torpedo threat without fear of retaliation. Should "A" brave this danger, by steering a slightly different course, he could, with his superior speed, in time, arrive on "B's" flank; but during the interval he is subjected to heavy preponderance in gun-power as well

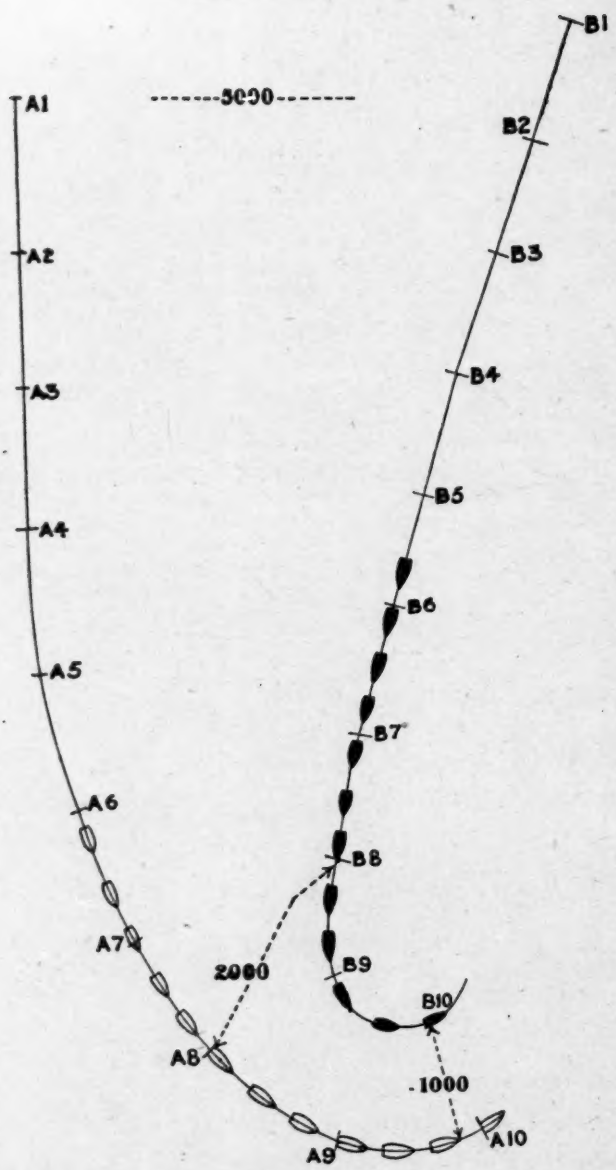

A1
3000
B1
B2
A2
B3
A3
B4
A4
B5
B6
A5
B7
A6
B8
A7
2000
B9
B10
A8
1000
A9
A10

FIG. 3 ("T-ING")

as the torpedo danger, and, in addition, "B" could, by a twelve-point turn together outwards and forming single line ahead (inverted), outflank "A's" rear. It is true that the latter movement of "B" would be met by the objection of interference of fire while turning; but, on the other hand, "A" would also suffer if he turned; and if he did *not* turn, "B" would be able to alter course so slowly as to allow his fire to be continued to a certain extent, and, further, he would be in a position to bring his flank attack to a successful issue; while if "A" *did* turn, "B," though unable to flank, would be in no worse condition than heretofore, and the fleets would again be in line ahead and parallel. Hence, "A" will not adopt this method of outflanking with any hope of success. (Fig. 2.)

2. For the attempt to be made in single line ahead, it will be admitted that the possibility of doubling "B" up is proportional to, and governed by, two factors:—*a*. The relative speeds; and *b*. The distance to which it is necessary that they should close. These two are correlative. If the containing fleet wishes to attain the object without approaching nearer than 5,000 yards, it must possess a very high speed—an impossible speed. If it insists on outflanking, it must sacrifice range and risk the torpedo danger, and close to the distance which its limited speed entails. The fast fleet always has the faculty of lessening the distance; this is accentuated in our case by the fact that "B" does not turn away to any great extent, for three reasons. He is afraid of losing touch with a faster and weaker antagonist; too sharp a sweep will double him up and mask part of his fire; and he might be "T-ed" in rear—regardless of torpedoes—through a sudden movement by "A."

As will be seen, "A" must close to between 2,000 and 3,000 yards before he can expect to turn "B's" van; he continues closing as "B" turns. At this point it is essential to ask whether "A," having been so long under a disadvantage in respect to gun-power, is fit to carry through the flank attack. (Fig. 3.)

Supposing 100 hits to put a ship out of action, and making the same allowance for difference in range, as in Table 2, Table 1 will show that in 16¼ minutes each ship has received, "A" 100 hits, and "B" 53 hits. Even if 100 hits were to be considered an unsuitable estimate of what is required to put a ship out of action, "A" is so reduced as to render this form of attack impracticable with his weak armament. The fight has been virtually decided in the time stated. At Tsushima it was decided in 33 minutes, but ships had been disabled in 17 minutes.

Table 1.

Unit.	Gun-power.	Gun-power Co-efficient of Reduction.	Co-efficient for Range.	Range.	Time. Minutes.	Hits received per ship (progressive).
Approach to 5,000 yards in line abreast.						
A Fleet	2	—	—	—	5	19·06
B Fleet	2·54	—	—	—	5	15

Closing 5,000 to 4,000 yards in line ahead.

A Fleet	3·74	·81	1·1	4,500 (mean)	5	61·13
B Fleet	6	·85	1·1	,,	5	39·97

Closing 4,000 to 3,000 yards in line ahead.

A Fleet	3·74	·39	1·2	3,500 (mean)	4½	90·29
B Fleet	6	·6	1·2	,,	4½	51·79

From 3,000 yards to when B begins to double up.

A Fleet	3·16	·1	1·3	3,000 (mean)	1·8	100·37
B Fleet	6	·48	1·3	,,	1·8	52·9

N.B.—There is some disparity in the distance as the lines converge, which is not taken into account as the range is so short, and "A" has small power of offence remaining.

It might be said that "A's" concentration of six ships on "B's" three leaders as the lines converge would put the latter out of action; it is to be remembered, however, that "A" has sustained great and progressive damage while attaining the necessary position.

There are some factors which are not here considered:—

1. Torpedo attack, as the fleets will be within torpedo range; equality in this respect is established.
2. There will be, perhaps, fewer misses from the guns of the ships using shorter ranges, such as those in the van; though even the rear ships are close, judged by modern standards. If this were allowed for, it would improve matters slightly as far as "A" is concerned, as his average range is less than "B's" towards the end of the evolution.
3. Ranges at which armour will be vulnerable are reached.

From the foregoing results, where no outside influences are at work, it is deduced that though the fleet which possesses the moderate preponderance in speed possible to a battle-ship instanced in this case can reduce its opponent's superiority in armament by the flanking movement, the part of the action when it is manœuvring for the attainment of this objective is attended with such grave inferiority in gun-power, that the faster fleet's gain by these tactics will be so inappreciable as to render them, when no strategic issues are at stake, inadmissible. That the only circumstances under which—with no external assistance—the fleet of decidedly inferior armament can hope to profit by its superior speed in this respect is when such speed is so great—an unobtainable condition in a battle-ship—as to admit of the period of attaining the flanking position being a sufficiently negligible quantity to justify the sacrifice to the end in view.

(To be continued.)

THE RÔLE OF THE RED CROSS SOCIETIES IN PEACE AND IN WAR.

By Lieut.-Colonel W. G. MACPHERSON, C.M.G., M.B., R.A.M.C.
(Deputy-Assistant Director-General).

Wednesday, 6th February, 1907.

Colonel Sir HERBERT PERROTT, C.B., in the Chair.

The CHAIRMAN.—The first duty I have to perform this afternoon is to apologise for the unavoidable absence of my friend, Lord Cheylesmore, who, I am sorry to say, has been prevented from coming here to-day. I have been asked to step into the breach and take his place. I feel perhaps to some extent it is not altogether inappropriate I should do so, because it is now 31 years since I was Hon. Secretary of the Eastern War Sick and Wounded Relief Fund, and the last 30 years of my life have been devoted to the promotion and the development of the Ambulance Department of the Order of St. John of Jerusalem, two great outcomes of which have been the St. John Ambulance Association and the St. John Ambulance Brigade, which provided during the South African War over 2,000 men who took part in that war as Hospital orderlies, and about 60 of whom laid down their lives in the service of their country. I also had the honour of being a member of the Central British Red Cross Committee during the South African war, and during that time it was my privilege to make the acquaintance of Colonel Macpherson, our lecturer, who was the Hon. Secretary of that Committee, and I had ample opportunity of seeing the great skill and the technical knowledge which he displayed in performing his duty, which gave the greatest possible satisfaction to the late Lord Wantage and the members of that Committee. I will not further trespass upon your patience, except to say that it affords me very great pleasure to introduce to you the lecturer this afternoon; and when you remember that he had the opportunity of being present during the recent war between Japan and Russia, I am quite sure that will be enough to convince you that we shall hear from him an expression of the latest views of the best way of developing that great work which is performed by the Red Cross Societies.

LECTURE.

DURING the summer of last year the Geneva Convention of 1864 underwent revision, and a new Convention, which has not yet been ratified, was signed. It contains certain clauses that refer specially to Red Cross Societies, but only to those that are authoritatively recognised by the Government of their country, and incorporated in the general military scheme of aid to sick and wounded in war.

In the Convention of 1864 all mention of Red Cross Societies was purposely omitted. A wave of sentiment, culminating in an International Conference, that was held in Geneva in 1863, had swept over Europe at the time. The Conference passed ten resolutions, five of which were concerned with the organisation of groups of volunteer nurses, who should succour the wounded on fields of battle, maintain themselves out of their own resources, act independently, and be protected by a special badge.

When the conference, which, it was desired, should make these principles binding upon nations, was convoked in 1864, the responsible delegates of some of the States refused to have anything to do with a treaty that should recognise so impracticable an element in war as these independent volunteer nurses, and it was on that account that the Geneva Convention of 1864 left the Voluntary Aid Societies out. However, in the immediately succeeding wars, and especially in the war of 1870-71, National Committees of the Red Cross, that had sprung into being in consequence of the resolutions of 1863, became extremely active.

Independent ambulances, not only of both belligerents, but also of neutral States, making use of the flag and brassard which the Geneva Convention had declared to be the distinctive sign and protecting emblem, not of volunteer ambulances, but of the regular field medical units of armies, roamed over the area of operations. The effect of all this was that Voluntary Aid in war fell into disrepute. M. Guelle, a French writer on the "Laws of War," in a précis published about ten years after the Franco-German War, states that this was due to three causes, viz.: ignorance of the terms of the Convention; want of power to punish infractions of it; and want of organisation, direction and control of Red Cross Societies, with consequent action on their part that was rarely useful and frequently harmful. One gathers from M. Guelle's commentary that they became the hotbeds of rivalries and jealousies on account of their conflicting interests; caused situations embarrassing to the tactical operations; interfered with the healing of wounds, from the fact that men and women ignorant of the principles of surgery handled them; and were the refuge sometimes of people animated with other motives than the laudable one of ameliorating the condition of the wounded. A writer, who served as chief of an ambulance, said afterwards, in reviewing their work: "We believe that civil ambulances on the field of battle have played their part, and they will play the part no more (*ce rôle est terminé*)."

One may well ask, then, how it is that the Red Cross Societies have so far changed in character as to receive recognition in the Geneva Convention of 1906? The answer is, that in practically all the great countries of Europe they have been obliged, by the lessons of these wars, not only in their own interests but also in the interests of sick and wounded, and of the nation generally, to come under Government control, and to have their place and work definitely assigned to them as an integral part of the Army Medical Service in war.

I have already stated that it is only Societies thus incorporated which the new Convention recognises.

The main purpose, then, of the paper which I have the honour to read to you this afternoon, at the invitation of the Council of this Institution, is intended to place before you some of the facts con-

nected with the *rôle* which the Red Cross Societies now play under these altered conditions.

But let me, first of all, draw your attention briefly to the official organisation that is adopted in most modern Armies for the care of the sick and wounded in war, as without some such knowledge it will be impossible to appreciate the *rôle* of the Red Cross Societies.

If you refer to the diagram you will see that there are three main zones of military operations:—1. The area in which the Field Army is operating; 2. The line of communication by which that Army is fed and replenished; and 3. The home territory where everything for the Army is got ready to be passed up to it.

Now the main objects of an Army medical organisation is to collect and temporarily assist the sick and wounded in the first of these zones, to evacuate them to the second and third, where medical and surgical treatment can be carried out, continuously and with the least possible disturbance, in fixed hospitals and establishments; and to replenish the medical and surgical *personnel* and *matériel*. In other words, the medical service of an Army, with the exception of the last-named function, works in a current that runs in an opposite direction to that which feeds the Army; that is to say, down, not up, the line of communication, its final efforts being at the base of operations or in the home territory, and not in the area of the field army.

The process, however, of collecting, affording temporary relief to, and evacuating the sick and wounded, is one that requires most careful organisation and preparation. It is carried out by what are known as mobile field medical units, which are trained and equipped for their special purpose, just as carefully as a battery of artillery, or any other field unit, has to be trained and equipped for its special purpose.

Such units must evidently be composed of officers and men whose training gives them a special knowledge of military and field service conditions, enabling them to follow intelligently and effectually the movements of the operating Army, and whose equipment conforms to the requirements of a mobile Army. The Armies of many countries are rich in such mobile units, working in échelons in the zone of the field army, and organised for the rapid collection, temporary care and removal of wounded from that zone.

There is first the medical service with each battalion. It includes medical officers, stretcher bearers, hospital orderlies, and temporary dressing stations. Close in touch with it are the great bearer battalions or ambulances, as they are called, which collect the wounded, as an engagement proceeds, open main dressing stations about a mile in rear of the fighting line, and continuously pass on the wounded to the field hospitals further back. The field hospitals are ready to move up and open, wherever they are most needed, under the direction of the administrative medical officer. In an advance, they usually come up and settle on the spot where the main dressing station was at work, setting it free to move on. These field hospitals in their turn wait to be relieved by what the Japanese and German organisations call the Reserve *personnel*, which is brought up from the head of the line of communication when required, and opens stationary hospitals which take over the wounded from groups of field hospitals, and enable the latter to rejoin their divisions with the field army. Another unit is also brought up at the same time, or even in advance of the Re-

serve *personnel*, namely, the sick and wounded transport unit, which arranges all the details and *matériel* for removing the wounded from the field hospitals to the stationary hospitals, or from the latter to the railway line. The wounded are then conveyed either by hospital trains, or by improvised trains to the fixed hospitals on the line of communication, or by rail or water to the hospitals in the home territory, where they are finally disposed of either by being returned to the field army on recovery, sent to convalescent homes, granted furlough to their own homes, or finally discharged from the Army on account of permanent incapacity for further service.

It was an organisation of this kind that the Japanese set in motion during the recent campaign in Manchuria; and it proved a magnificent and efficient machine for the relief of the victims of war, as well as for enabling the operating army to act without being encumbered with masses of inefficient men.

It is difficult to estimate with certainty the number of sick and wounded for which such an organisation can provide; but the chief point to note is that it fluctuates very greatly. At times there is practically no sickness or wounds in a field army, and at such times all except the more trivial cases have filtered down to the hospitals on the lines of communication and in the home territory; but there are other times when a great mass of work is thrown on the units of the first of the three zones. This is invariably the case during and after great battles, or during sudden epidemics. It is then that the organisation is strained to the utmost. Units that for weeks, or even months, were doing nothing, but keeping themselves ready, are called upon to work incessantly day and night, and to expand to their utmost capacity. Is, then, the number of units, their *personnel* and organisation, sufficient for such a strain, and would not voluntary aid and Red Cross Societies be invaluable on such occasions? I can only say, in reply, that the Japanese Army Medical Organisation in the field met the strain easily and without confusion. As an instance of this, I may mention that during the battle of Mukden I saw one field hospital, normally equipped for 200 patients, take in 1,000 wounded in 24 hours, all of whom had already been dressed at the temporary or main dressing station the same day, have them all carefully examined and recorded, more permanently dressed, and eventually handed over to the transport unit for evacuation to the stationary hospital within three days. The hospital then closed and opened for work again on the fifth day some 20 miles further on. This is only one out of many similar instances of expansion of field hospitals. under the system I have described, that came under my personal observation.

I also saw the men wounded at the battle of Hei-kou-tai, (a battle fought during the latter days of January, 1905, in snowstorms and bitter cold, some 15 miles from the railway), comfortably housed and attended to in a hospital at the base in Dalny, between 200 and 300 miles distant from the battle-field, 3 or 4 days after the battle was fought. An organisation that can show results like this must surely be regarded as capable of meeting the requirements of modern war and of humanity. Voluntary aid played no part in this work, but it played a real and important part in the home territory, without which the military authorities could not so easily have set free from the hospitals or establishments in the home territory the trained *personnel* that formed the component parts of this great organisation.

I mention these facts because they may help to dispel much misunderstanding regarding the extent to which the Red Cross Societies help the Medical Service in the field, and the nature of that help. Much that is written in the literature of Red Cross Societies, and that appears in the public Press, leads the general public to imagine that this work, or, at any rate, important parts of it, is carried out by voluntary societies and private efforts. I am bound to dispel this illusion because otherwise one will never learn to understand the importance of an efficient Army Medical Service, and the proper *rôle* of voluntary societies in connection with it.

Many of you will probably ask what, then, is the use of Red Cross Societies? There are, I know, some who say that in any case they should not provide what the State should provide for itself, but if this view were carried to a logical conclusion, one might truly say that there is no use for the Red Cross Societies at all. There is, however, one important element in connection with the care of the sick and wounded in war which cannot be ignored, namely, the sentiments of humanity and the sympathies of the people, more especially of the women of a nation, who have to bear the strain of anxiety regarding the fate of relatives and friends serving in the area of operations. The outburst of sentiment, which a great national war evokes, somewhat resembles the floods that occasionally pour over a land and wreck the careful work of years. It is a force which has to be reckoned with. Colonel Young, a Commissioner of the British National Aid Society in many wars, said of it in this Institution, in 1896: "Many and many a time, against my better judgment, I have been forced by the irresistible wave of public philanthropy at home to commit indiscretions. . . .

"In the expedition to Khartoum, 1884-5, I even believe it overcame the opposition of the military authorities, who were by no means enamoured of having to carry out the objects desired by public philanthropic opinion."

Now the Red Cross Societies are like the barriers which wise men construct to collect and retain the floods, and keep them until they can be utilised at the time, and in the manner, in which they may most materially aid their plans and their labours. The great nations of Europe recognised this *rôle* of Red Cross Societies long ago. The great nation of Japan has recognised it. The Swiss Federal Government issued a message on the subject in 1902. The United States of America passed an Act of Congress with a similar purpose in 1905; and, in fact, most civilised countries see in Red Cross Societies, organised under State recognition and responsible military guidance, the only method by which popular sentiment can be allowed full play in really useful directions in time of war.

Let me proceed, then, to describe what has been effected in some of the foreign States, in the direction of recognising the *rôle* of national Red Cross Societies, and in directing the schemes prepared by them for aid to sick and wounded in war, and also, so far as time permits, the nature and extent of the work of the Societies under these conditions.

Such details may be of some special interest just now, because in June next the eighth International Conference of the Red Cross Societies will be held in London. The previous Conferences were held in Berlin in 1867, in Paris in 1869, in Geneva in 1884 (note the period of fifteen years when there was no Conference, chiefly

because of the disrepute, already alluded to, into which voluntary aid had fallen after the war of 1870-71), in Rome in 1892, and afterwards quinquennially, in Vienna in 1897, and in St. Petersburg in 1902. A British Red Cross Society took no part in these Conferences, but Army Medical officers attended them as official delegates of the War Office, and Sir John Furley, that distinguished advocate and organiser of voluntary aid, was present at them all, *honoris causâ*.

In France the work of voluntary aid in war is regulated by a Government Decree, dated 20th October, 1892. The decree consists of 23 articles, a full account of which will be found on page 402 of the Annual Report of the Army Medical Department for 1899. It recognises three Societies as Societies of the Red Cross, namely: 1. The "*Société de Secours aux blessés militaires*," founded originally in 1864, in accordance with the resolutions of the Geneva Conference of 1863; 2. The "*Union des Femmes de France*," incorporated in 1882; and 3. The "*Association des Dames françaises*," incorporated in 1883. All these Societies are intimately associated with the Army Medical Service, but each is independent of the others in its relationship to the War Office and to the general public. As regards the official relations with the Army Medical Service, the decree provides that the schemes organised by each Society for war shall be governed by a "*Commission Mixte*," consisting of an Army Medical officer, representing the War Office, and a delegate of the Council of the Society. In addition to this, delegates of the Societies, approved by the Minister of War, are accredited to the general officer commanding each Army Corps District, and to his principal medical officer, and in naval stations also to the naval authorities and naval Medical Service. There is, further, a Supreme Council at the War Office, under the presidency of the Director-General of the Army Medical Service, composed of the presidents of each of the three Societies, the members of each "Commission Mixte," a naval medical officer, and the officer in charge of the Army Medical stores in Paris. A pay and supply officer (*Officer d'administration*) of the Army Medical Service is Secretary.

The "*Commissions Mixtes*" of each Society meet as often as the members think fit, and minutes of their proceedings are submitted to the President of the Society concerned and to the War Office. The delegates in the Territorial Army districts must submit a statement of the resources of their Society and the schemes, that are ready within the district, every six months, to the principal medical officer of the district, who sends a consolidated return for all three Societies every six months to the War Office, along with his own remarks.

The Supreme Council must meet at least twice a year.

As regards its relations to the public, each Society acts in whatever manner seems best to it. Branch and affiliated Societies are thus found all over France, grouped together geographically according to the military districts. The "*Association des Dames françaises*" has also branches in some foreign countries, for French subjects living in them.

Article 2 of the decree of 1892 determines the nature of the aid which may be given in war. This is confined to four spheres of work:—1. The formation of hospitals in the home territory for the expansion of the military hospitals; 2. The formation of auxiliary field hospitals for work on the line of communication; 3. The collection and forward-

ing of voluntary gifts for sick and wounded to such places as the military authorities may specify; and 4. The formation of railway station sick rooms (*infirmeries de gare*), a duty that is assigned to the "*Société de Secours*" only. The Societies are not permitted to exercise any *rôle* in the zone of the field army.

With regard to the hospitals in the home territory, these are called auxiliary hospitals, and their organisation is worth studying. They must contain 20 to 100 beds, or more, and are numbered and registered in three series. A hospital in the first series is one for which everything is complete, according to a definite schedule of *personnel* and material, with funds sufficient to keep it going for two months, and capable of being got ready in one or other suitable building in the locality within nine days. There must be a complete register of *personnel*; all the necessary surgical instruments and medical and surgical material must be held in store, and the ward utensils, hospital furniture, bedding, etc., arranged to be supplied by local tradesmen, when required.

A hospital of the second series is one which is not complete but has at least half the arrangements ready, and which can be mobilised in sixteen days.

Hospitals of the third series are those the schemes for which are not so far advanced as the others.

Last year the "*Société de Secours*" had 6,073 beds registered in the first series, 3,170 in the second, and 20,602 in the third; the "*Union des Femmes de France*" had 73 hospitals of the first series with 4,260 beds, and 7,500 beds in the second series. The "*Association des Dames françaises*" had 42 hospitals of the first series, with a total of 2,573 beds, including 100 beds in a permanent hospital of its own in Paris; and 84 hospitals of the second series, with 3,742 beds.

The Auxiliary field hospitals of the French Societies are organised as the equivalents of the Regular field hospitals, *i.e.*, they have the *personnel* and material necessary for establishing a field hospital of 100 beds, and keeping it going for three months. The material is packed in panniers and packages similar to those of the Regular field hospitals. These Auxiliary hospitals are intended to remain on the line of communication, ready to be brought up as required to any spot where one of the Regular field hospitals has become temporarily stationary on account of its containing severe cases unable to be moved. The Auxiliary field hospital takes such cases over, and sets the field hospital free to rejoin its command in the field army.

The "*Société de Secours*" had 26 Auxiliary field hospitals ready last year, the "*Union des Femmes de France*" 20, and the "*Association des Dames françaises*" 8.

The "*infirmeries de gares*" of the "*Société de Secours*" are planned for certain selected railway stations along the lines, by which the sick and wounded will be sent back to the military and auxiliary hospitals of the home territory. They are opened at distances of not less than six hours' railway journey from one another, and are arranged for the double object of supplying meals to the sick and wounded passing through, and of receiving and temporarily treating those unable to continue the journey and evacuating them to the nearest hospital. They are thus equipped not only with all the requirements of a refreshment station, but they must provide from 5 to 15 beds for the reception of patients.

In 1906 the "*Société de Secours*" had the schemes for 88 "*infirmeries de gare*" ready. Full details of the Regulations and work of these units will be found in the Army Medical Report for 1899, p. 406, and p. 421.

All these schemes are prepared in peace, and, in addition, the Societies are engaged in training nurses, in disseminating knowledge in first aid, in maintaining depots for material, and in keeping the general public awake to the necessity of being prepared to help in their schemes when war breaks out. Need I point out how valuable is this supplementary aid which they are in a position to give to the Army Medical Service in war, and how well and effectively it is organised to enable the sympathies and generosity of the people to have full play in the zones, when they can do so most usefully without interference with military operations.

In Germany, voluntary aid is governed by the Army Field Medical Regulations, Part VI., the last issue of which received Imperial sanction on 18th December, 1902. A full account of the provisions of these regulations has been published in the *Journal of the Royal Army Medical Corps* for December, 1903 (p. 459 of Vol. I.), and the previous issue of these Regulations was translated in full and published by the Director-General of Military Intelligence in 1901. The whole of the voluntary aid schemes are under the inspection and control of a high officer, the Imperial Commissioner and Military Inspector of Voluntary Aid, who is attached to the Headquarter Staff of the Army. He has two assistant commissioners associated with him, and is in touch with voluntary aid throughout Germany by means of territorial delegates in civil districts and by Army Corps delegates, accredited to the general officer commanding each Army Corps, in military districts. Reports as to the resources of voluntary aid in each district are submitted annually to the War Office.

The regulations do not permit of voluntary aid being employed with the field Army; and they declare the *rôle* of the Red Cross Societies to be:—1. The organisation of groups of male and female nurses and cooks for duty in stationary field hospitals on the line of communication and in the military hospitals of the home territory; 2. Similar organisation of groups to help in the work of conveying the sick and wounded from hospital to hospital, and to and from the railway stations; 3. Organisation of groups of individuals suitable for the management of stores; 4. Collecting and forwarding gifts; 5. Helping in the expansion of the military hospitals in the home territory by establishing special Red Cross hospitals, by managing private convalescent homes, or by taking over special branches of work, such as the laundry work, in military hospitals; 6. Managing a central information bureau for keeping relatives informed regarding the sick and wounded; 7. Establishing railway sick rooms along the line of railway; and 8. The preparation and equipment of hospital trains. In 1905, under the first of these headings, the "*Genossenschaft freiwilliger Krankenpfleger*," an association of young students, had 7,353 members, and was organised in 36 groups of male nurses, belonging to this class, for distribution amongst the military hospitals. In Bavaria there were also detachments of male and female nurses organised to follow up the army and take over nursing duties in the hospitals on the line of communication.

A National Ladies' Red Cross Society is also engaged in training professional female nurses for duty in war, and also in instructing women to become assistants to these nurses; that is to say, women who would not be regarded as trained nurses, but who could work under their supervision.

Under the second heading very important work has been done in the formation of what are called "*Hilfs Sanitäts Kolonnen*," or groups of men, trained in first aid, in the duties of stretcher-bearers, and in improvising means of carrying sick and wounded, as auxiliaries to the regular stretcher-bearers of the Army Medical Service. Each group consists of at least 15 men, and is organised to carry out duties in connection with the conveyance of patients from hospital to hospital, or from hospitals to railway stations, and *vice versâ*, on the line of communication and in the home territory. In 1905 the Prussian Red Cross Societies had 803 such groups organised with a membership of about 22,192.

It is unnecessary to give details of work under the other headings, but it may be mentioned that many local branches hold different forms of fittings ready for improvising hospital trains; and are engaged in preparing Red Cross hospitals, and other schemes, for helping the military hospitals in the home territory; while numerous committees, affiliated to the Red Cross Society Organisation, are preparing schemes for opening railway sick-rooms in the localities where the committees exist. Thus the equipment for 196 auxiliary hospitals, and 11,052 beds are ready, and arrangements are made to take over the housekeeping of 88 military hospitals. Schemes for 599 railway sick-rooms and 525 convalescent homes are also ready. A central committee in Berlin regulates these schemes, and the general distribution of the organisation under it is in the form of National Societies in each of the Federated States, local Societies as branches of the National Societies, and affiliated Societies. They are all engaged, in peace time, in collecting funds and in preparing one or more of the schemes detailed in the regulations quoted above. In Prussia alone there are 14 provincial and 498 affiliated Societies; and the National Ladies' Society had 6 national, 11 provincial, 3 district, and about 1,200 affiliated Societies spread all over Germany and Alsace-Lorraine. The membership of the Ladies' Societies amounted to over 16 per 1,000 of total population, and of the other Red Cross Societies to 5·17 per 1,000 in 1905. The income was over £12,000, with capital value of nearly £410,000, of which more than half was in 170 portable hospital huts. In addition to these Red Cross Societies the regulations for voluntary aid also provide for the co-operation of the Hospitaller Orders of Knighthood, of which there are three in Germany, the Johanniter, the Malteser, and the Bavarian Knights of St. George.

The organisation of Red Cross Societies and the extent of their work, both in peace and war, are even more carefully elaborated in Austria-Hungary. The Societies are in official relationship, not only with the Imperial War Office (*Reichs-Kriegs-Ministerium*), but also with the War Offices for National Defence in Austria and Hungary, and, so far as peace work is concerned, with the Ministry for Home affairs. There are representatives of all three War Offices on the Central Red Cross Committee, which governs the schemes and preparations of the various Societies, and there are also military representatives of each War Office on the local committees of provincial

Societies. The central committee is composed of a president, two vice-presidents, one of whom is the Director-General of the Army Medical Service, two lady vice-presidents, and twelve members of each of the three recognised branches of the Red Cross, namely, the Provincial Aid Societies; the Ladies' Aid Societies, and the Austrian Patriotic Aid Society. The last-named is probably the oldest branch of organised voluntary aid, having been founded in 1859. The other Aid Societies commenced to be formed from 1878 onwards, and the project of bringing them all together in a central committee was first suggested in 1879. Statutes for a co-ordinated Red Cross Society were then prepared by representatives of the Ministers for War, for National Defence and for Home Affairs, and by representatives of the Societies, the first meeting of the central committee being held on the 16th March, 1880. At first there were Ladies' Aid Societies, distinct from the provincial Societies, but in lower Austria these amalgamated and formed one branch in 1890. In the kingdoms of the Empire, and in the other provinces, they still remain distinct. One of the two Hospitaller Orders of Knighthood, the "Deutsch Orden" or Teutonic Order, is in close touch with the Central Red Cross Committee, but the other, the Sovereign Order of Malta, acts independently of it and comes into direct touch with the Minister of War. The Vienna Voluntary Ambulance Association (*Wiener Freiwillige Rettungs-Gesellschaft*), is also included in the Austrian schemes of voluntary aid in war, although, in itself, independent of the Red Cross Societies. All the Societies are allowed free and independent action in their manner of collecting funds and preparing the schemes approved by the War Office; but a portion of the funds must go to the central treasury.

The central committee has at present under its supervision nine amalgamated provincial and ladies' Societies in Lower Austria, seven provincial and six ladies' Societies in the other portions of the Empire, 429 affiliated and local Societies, and in Galicia 80 district offices. These district offices differ from the other branches in that they forward all the money they collect to their provincial Society. The membership in 1905 was 54,790, and the annual income about £35,000, exclusive of nearly £500,000 invested as capital, £67,000 as value of material in depôts, and £85,476 as value of buildings and vehicles.

The schemes that are prepared by means of these resources in Austria for supplementing the Army Medical Service in war, are intimately associated with the organisation of that service, and in a manner quite peculiar to Austria-Hungary. In most of the Austrian schemes the Red Cross Society prepares and bears the expense of the material only, while the military authorities provide either the whole *personnel*, or a portion of it. In this way voluntary resources are made use of not only on the line of communication, and in the home territory, but also in the zone of the field army.

Thus, the Teutonic Order provides the material for 46 units, called "*Feld Sanitäts Kolonnen*," each containing four ambulance wagons and one general service wagon, loaded with medical and surgical material and medical comforts. The military authorities supply the horses, drivers, and other *personnel*, and one of these columns is attached to each of the Regular infantry divisional ambulances. The material provided by the Teutonic Order is kept in peace time in military mobilisation depôts along with the material of the regular service ambulances, to which they will be attached in war.

The Austrian and Hungarian Red Cross Societies also provide, between them, 64 transport columns called "*Blessierten Transport Kolonnen*," each consisting of 15 ambulance wagons, 3 bicycles, and 1 general service wagon, loaded with equipment and comforts. Each column is under a Red Cross official, but it is otherwise manned by the soldiers, stretcher-bearers, and hospital orderlies of the Landwehr Reserve, and by transport drivers, horses, etc., from the Regular field hospital establishments. One of these columns is attached to each of the 33 field hospitals of the Austrian Army, and 31 to each of the 31 field hospitals of the Hungarian Army, 13 of the latter being equipped for mountain warfare. The columns are employed in war on much the same duties as the "*Sanitäts Kolonnen*" of the German Red Cross Society, between the field hospitals and the line of communication, or on the line of communication alone. All the material is kept, in time of peace, in the mobilisation depôts of the military hospitals.

Two mobile depôts with scheduled quantities of hospital and ward utensils, bedding, kitchen requisites and medical comforts, with 50 light wagons for transport, are maintained by the Red Cross Society for purposes of replenishing the Teutonic Orders "*Sanitäts Kolonnen*," and other voluntary aid units in the field, namely, four field hospitals of 200 beds each, provided by the Teutonic Order; two similar field hospitals, each with a modified sick and wounded transport column, provided by the Austrian Red Cross Society; and one field hospital, provided by the Hungarian Red Cross Society. These hospitals are the equivalent of a section of the regular field hospitals, which, in Austria, are organised for 600 beds. They form, in fact, sections of one or other of them, and are under the command of an Army Medical officer. The *personnel* is mainly provided by the military authorities, and the material is kept ready in the Red Cross Societies' mobilisation depôts in the Prater, in Vienna.

The Sovereign Order of the Knights of Malta maintains twelve hospital trains fully equipped and manned.

The Ladies' Aid Society of Trieste and Istria has a scheme prepared for fitting out one of the ships of the Austria-Hungarian Lloyd Company, as a hospital ship, in conjunction with the naval and military authorities. This enterprise is the earliest and almost the only prepared scheme in any country, with the exception of Japan, for providing a hospital ship in war. It was ready in 1892, but has undergone some modification recently.

Railway sick-rooms or rest stations are extensively organised by the Austrian and Hungarian Red Cross Societies. In Austria there are 52 ready for mobilisation, with accommodation for 4,268 sick and wounded, exclusive of 212 beds prepared, for establishing rest stations in the railway stations of Vienna, by the Vienna Voluntary Ambulance Association. In Hungary the Red Cross Society has 15 railway sick-rooms of 200 beds each, 1 of 100 beds, and 44 of 10 to 12 beds each.

Auxiliary hospitals for expanding the military hospitals in the Home Territory are as widely organised as in France. The Austrian Society has the schemes ready for 175 hospitals, the largest of which has 1,000 beds and many 400 to 600, 80 convalescent homes, and 3,317 nursing stations. In all 500 officers and 13,924 men can be accommodated in hospitals, and 2,889 officers and 10,434 men in private homes.

In Hungary the Red Cross Society is prepared to establish in the home territory 8 large hospitals, 1 of 800 beds; 5 of 200 beds; and 2 of 100 beds; in addition to accommodation for 2,160 patients in smaller hospitals, and 9,000 in convalescent homes. It maintains a permanent hospital of 120 beds in Buda Pesth for instructing nursing sisters for duty in war.

The *personnel* on the register of the Red Cross Committee for manning these establishments consists of 808 medical men, not liable for military service, 36 pharmacists, 150 local chemists and their shops, 1,061 nursing sisters, of whom 704 belong to religious communities, and 34 male nurses, also belonging to religious communities. The military authorities undertake to provide 3,740 men of the medical service reserve for office, depôt, and hospital duties in the Red Cross Auxiliary Hospitals, in order to supplement the Red Cross Societies' own *personnel*.

Local transport groups are also formed in the home territory, chiefly out of local ambulance associations and volunteer fire brigades. At present 136, with 1,667 members, are so registered for the duty of helping in the conveyance of sick and wounded to local hospitals from the railway stations.

These are the chief but by no means all of the undertakings of this vast organisation in Austria-Hungary in co-operation with the military medical service. Those who have not actually seen their depôts and the perfection of the arrangements for mobilisation, can scarcely realise the extent of the rôle played by the National Red Cross Societies in that country. I can only say that each minute detail is carefully planned and scheduled, and exhaustive tables for mobilisation are ready. Any one who cares to examine the annual report of the central committee can see this at a glance, although that report alone forms but a small part of the elaborate details that are published in connection with the various schemes of the Austrian Red Cross Societies.

Time does not permit my giving similar details regarding the Italian and Spanish Red Cross Societies. They are both organised very widely throughout Italy and Spain, and are extremely active in time of peace. The Italian Red Cross was the first, or at any rate, one of the first of the National Red Cross Societies to become organised in close touch with the military authorities, and under their inspection and control. It is governed by official regulations promulgated in 1884. Each of the twelve Army Corps districts has a district or regional Red Cross Committee, and each coast guard district a special sub-committee. The presidents of the district committees are in close touch with the generals commanding the Army Corps, and under the District Committees there are section, local or communal Societies or Committees, that are in touch with the generals commanding the military divisions. Altogether there are 222 such branches, with 89 ladies' branches. They maintain depôts in each of the military districts, and are able to mobilise about 50 field hospitals, 64 mountain ambulances, and 16 hospital trains, including three provided by the Knights of Malta, with 61 rest stations and railway sick rooms, as well as special formations, called river and lake ambulances. Some of these formations have, for many years past, taken part in the military manœuvres.

The Spanish Red Cross Society is organised on very similar lines and was recognised, in 1864 and in several subsequent official decrees,

as a civil Society. The relationship with the Army and Navy is governed by Royal Decree of 1902 and 1903. Its literature is vast and interesting; it has important ambulance groups, arranged in brigades and divisions. They are exercised at military and other manœuvres, and do much good work in public calamities. In 1898 an auxiliary corps of cyclists for bringing aid to and carrying sick and wounded was organised by this Society.

There is also no time to describe the voluntary aid organisations of countries, like Belgium, Holland, Switzerland, and, in fact, all the countries in Europe and America, where official recognition and encouragement are given to Red Cross Societies, to induce them to become organised in time of peace on lines that will enable them to dove-tail into the Army Medical organisation in war, materially enable that service to expand and thus relieve it of a considerable amount of anxiety in its responsible function of providing for the care of the sick and wounded.

But I may be allowed to draw attention to the excellent methods of utilising popular sympathy in Japan. The Red Cross Society of that country was developed out of a Society that existed in 1877. It became a Red Cross Society in name in 1886, was incorporated by official decree in 1898, and had its work affiliated to that of the Army Medical Service by an Imperial Ordinance of December, 1901. The Society is directed by a central committee with local branches all over the Empire, grouped according to military divisional districts and civil prefectures. Associated with them are the branches of the Ladies' Voluntary Nursing Association, which has existed since 1887. The whole of the work, which these Societies undertake in war, has been carefully determined by the military authorities and loyally and patriotically carried out by the Societies themselves. It consists of three very clear and simple duties, but they are duties which give the women of the nation just the work that they are all most anxious to do. First of all the Societies, and especially the ladies' branches, are engaged in supervising the training of professional female and male nurses throughout the country. The Red Cross Society maintains, for the purpose, an excellent hospital in Tokyo, and two or three smaller ones in other parts of the Empire. The training is extremely thorough and lasts for three years. The trained nurses are then allowed to remain working in the hospitals or to take private nursing; but for war purposes they are formed into consecutively numbered groups of what are called "Relief (or Nursing) Sections of the Red Cross Society." Each of these sections consists of two doctors, one accountant, one apothecary, two superintending nurses, and 20 nurses. They form a staff for taking over the treatment and nursing of 100 patients in a military hospital. At the beginning of the war with Russia 116 of these groups were ready, the first 98 being female nursing sections, and the remainder male sections. But a considerable number was added during the war, and 32 male sections were despatched, at one time or other, for duty in the fixed military hospitals at the bases in Manchuria, and on the line of communication.

The female sections were employed in the military hospitals in the home territory only, and on hospital ships. In the former establishments, 78 female sections were employed during the war, mainly in the wards for severe cases, and in the operation and bandaging rooms. 38 male or female sections were also employed on board the

military, naval, and Red Cross Hospital-ships, so that 150 of these nursing sections were employed in all during the recent war.

The second of the duties imposed upon the Red Cross Society and the Ladies' Volunteer Association is that of preparing bandages and first field dressings. The War Office sends requisitions from time to time to the central committee of the Red Cross Society to deliver to the central depôt of the Army Medical Service so many bandages, etc., on a given date. The central committee of the Red Cross Society distributes the work amongst the various local branches, and thus, in all parts of the country, the women meet at fixed times in one or other of the local public buildings and work together to complete their task. The third duty is that of forming railway refreshment rooms or rest stations, along the line of railways in Japan, for receiving sick and wounded passing through on their way to the military hospitals in the home territory.

It seems to me that the Japanese have by these organisations solved the problem of women's work in war. No schemes, such as these three, could more perfectly reach the sympathies of the people in their homes and touch the heart of a patriotic nation, for it is on patriotism, a virtue which they place highest in the scale of public ethics, that the Japanese depend for the support of their voluntary aid schemes, and the humanity, to which other nations appeal, and which is none the less present in Japan, is to their minds dependent on this higher virtue. It is, thus, that 1 in every 45 of the whole population has become a member of the Red Cross Society, merely with a view to subscribing to its work, and that its annual income, which, in 1903, was £300,000, is consequently larger, perhaps, than that of any of the great Red Cross organisations of Europe.

A minor organisation of the Japanese Society is that of transport columns. Three were organised before war broke out, but only one was mobilised during the war. It was split into small groups and employed at Antung and along the line of communication of the first Army, on duties similar to those of the German "*Sanitäts Kolonnen.*" The Japanese transport column is, however, a large body compared with a German "*Sanitäts Kolonne,*" and consists of about 150 officers and men.

The two hospital ships of the Japanese Red Cross Society are also organisations that should be mentioned, because they are examples of a method of ensuring the rapid fitting out of suitable ships for hospital purposes in war. But one must not overlook the fact that they were only 2 out of 18 similar ships provided by the military authorities, and the expense of these two ships may not thus be commensurate with the extent of the assistance that they are able to give.

The Japanese Society does not provide for the expansion of the military hospitals in the home territory or for hospitals on the line of communication, or elsewhere, as is the case in those of the European Red Cross Societies that I have described; but their permanent hospital in Tokyo is handed over to the Army Medical Service in time of war. It became, thus, the nucleus of a large section of the Tokyo military hospital during the Russo-Japanese War.

It will be observed from this description of the Japanese Red Cross Society that none of its work was in the zone of the field army, and very little on the line of communication. With the exception

of supplying male nursing sections to some hospitals on the latter, and one transport column, all its work was in the home territory, and no women nurses or women's help of any kind went beyond the home territory and the hospital-ships. It had no administrative control over patients, whom its relief sections treated and nursed. That was entirely out of its hands. Yet I never saw work carried out more harmoniously and with less friction.

In marked contrast with this organisation we have that of the Russian Red Cross Society. The Russian Society is not, strictly speaking, placed on the same basis as the Societies of other countries. It is a State Institution, supported, to some extent, by special taxation, such as stamps on railway tickets, and surtaxes on telegrams, etc. The president and members of the central committee are Government officials, and all important actions of the committee are submitted for the approval of the Government. The various voluntary charitable associations are affiliated to it, although without interfering with their independent existence; and they are placed under the military head of the Army Medical Service in war. No definite schemes are actually prepared and kept ready in peace; and the work done is very much of that improvised kind, which characterised the schemes of voluntary aid in the South African War. There is one great exception to this, however, namely, the scheme for supplying trained nursing sisters to military hospitals. In Russia the Red Cross Society, or rather the State itself, has the monopoly of providing trained nursing sisters for civil and military hospitals belonging to the State. For this purpose, throughout the Empire, European and Asiatic, there are about 36 lay communities of nursing sisters with hospitals belonging to them, where the nurses undergo a thorough and prolonged course of training. The nurses are sent to the various military and civil hospitals, as required, on payment of fixed fees. All the nurses of these communities are ladies of gentle birth, and the difficulty during the recent war was to keep them satisfied with employment in hospitals on the lines of communication. In fact, the Delegate-General of the Russian Red Cross Society in Manchuria informed me that he found much difficulty in getting many of them to work contentedly anywhere but under the exciting conditions of proximity to the actual fighting. The result was that the Russian medical formations, right up to the very fighting line, were supplied with nursing sisters, and many private hospitals of diverse characters were also seen in the zone of the field army. We have here, then, something different from the organisation of other European Armies, where conditions of this kind are forbidden. But in Russia, as I have said, there are no definite peace schemes for utilising voluntary aid in war, as is the case in other countries. The various branches of the Red Cross Societies throughout the Empire are mainly local offices, for the purpose of collecting funds and forwarding them to the central treasury. In this way, in 1902, some 12,000,000 roubles (over £1,000,000) had been accumulated for purposes of aid to sick and wounded in war. Delegates-generals, all officials appointed in peace time by the War Office, are assigned to various posts throughout the area of operations whenever war breaks out. They receive instructions to open up such establishments as are necessary for receiving sick and wounded from the fighting Army, and whatever money or material they require is sent to them with a lavish hand from the central treasury.

It was, thus, that in the recent war, the Russian Red Cross Society maintained alongside of the Regular Army medical formations, 9 mobile ambulances, 10 refreshment stations, 96 hospital trains of all kinds, a few mobile laundries, disinfecting detachments and scientific laboratories, aid stations and railway station sick-rooms, hospitals for insanes, special hospital and homes for nursing sisters, depôts for medical and surgical material, hospital bedding, etc., depôts for forwarding gifts, information bureaus, and 157 temporary field hospitals with nearly 35,000 beds in all, in addition to some 35,000 more in the home territory. The extent of the aid was great, and nothing but praise can be given to the devotion of the 8,000 and more nursing sisters who took part in it, and, in fact, not only to the private hospitals in the area of operations, but to the whole work of the Regular Army Medical Service of Russia and its Reserves. But just because of the absence of that careful peace organisation and control, by which, in other countries, the work of Red Cross Societies is subordinate and supplementary to the regular military medical organisation, and not parallel to and overlapping it, one heard frequently of the friction and rivalry which do so much to interfere with the harmonious working of voluntary efforts to aid the sick and wounded, and to prevent which most Governments have been led, to encourage the Red Cross Societies to become properly organised in peace under responsible military guidance for their work in war.

I have now endeavoured to give some idea of the work of the great Red Cross Organisations of other countries, so far as the preparation of schemes for aiding the Army Medical Service in war are concerned. The peace work of the Societies not only consists in maintaining these schemes in a state of efficiency for mobilisation, and in extending and developing them, but also in exercising them in connection with public calamities. Some of them extend their sphere of peace work further. The Italian Red Cross Society for example is taking an active part in the campaign against malaria, and the German Society in the campaign against tuberculosis. We may wonder, in this country, how funds are regularly subscribed in peace time for war schemes, which may never be required; but, in this respect, one must remember that in countries where the principle of national military service is accepted, military preparations, at any rate, those for home defence, come near to the homes of the people. Most societies hold out, in addition, the attractions of certificates, medals, decorations, and rewards for heroic deeds in connection with public calamities. There is also the temperament of races to be taken into consideration, and on this point M. Etienne Lamy made some interesting remarks in an address to the French "*Société de Secours*" last year, in which he ascribed the absence of similar Red Cross Organisations in the Anglo-Saxon races to the fact that the struggle for wealth so occupies peoples' minds that they have no time to think of anything else; but, he adds, they give lavishly when their attention is called to actual conditions of distress; although the subscriptions are disproportionate and spasmodic, like the passing and brief attention paid to things by people in a hurry. There are, therefore, he says, under such conditions, little permanent organisation, few resources accumulated in advance, or undertakings which endure for a long time.

It is not, however, my intention to contrast the continental organisations with Red Cross work in our own country, but, as contradicting to some extent M. Lamy's views, I may draw attention to the excellent material and splendid peace organisations which exist amongst us, and which could easily be adapted for work in connection with our own military medical organisation in war. The St. John Ambulance Association, for example, has 374 centres at home and abroad; the St. John Ambulance Brigade, organised in ambulance and nursing divisions on military lines, has forty-six corps of ambulance divisions at home, and six in the Colonies, with 503 ambulance divisions and 133 nursing divisions, having a total strength of 17,000 approximately, in addition to an auxiliary sick berth reserve for the Navy, and bearer companies for the Army of 524 and 464 members respectively. The Army Nursing Reserve, an organisation founded many years ago by the forethought of H.R.H. Princess Christian, has about 600 fully-trained professional nurses on its register for work in military hospitals, ready to supplement in war the staff of Queen Alexandra's Imperial Military Nursing Service. The Soldiers' and Sailors' Help Society, which did such good work during the South African war, in connection with the organisation of convalescent homes for sick and wounded soldiers, has 1,153 districts throughout the country, with a membership of 13,510. The St. Andrew's Ambulance Association in Scotland is rapidly taking a front place in the special organisation of voluntary aid, as supplementary to the Army Medical Service in war, and we welcome its propagandist efforts in the form of a young but interesting journal. Then we have the British Red Cross Society, developed out of the National Aid Society, which, under the distinguished and patriotic guidance of the late Lord Wantage, was founded in 1870 during the Franco-Prussian War, and which has devoted so much of its funds not only in aid of the sick and wounded of our own country, but also of every other country that has since been engaged in war. The British Red Cross Society is now, under the presidency of Her Gracious Majesty the Queen, taking an active part in the peace organisation of voluntary aid on behalf of sick and wounded in war. But the co-ordination and consolidation of the work of all these bodies, in some clear and definite schemes of supplementary aid to the Army Medical Service, are still matters which require to be more closely considered. Such co-operation and co-ordination of work may be said to be in their infancy in this country. If we care to study models, we have a wealth of material to select from in the organisations of those countries to which I have ventured to draw attention in this paper, and, in this connection, I would specially mention the "*infirmeries de gare*" and the system of auxiliary hospitals in France and Austria-Hungary; the nursing groups of Japan; the transport columns of Austria and Germany; and the general organisation of information bureaux and depôts for receiving and forwarding gifts.

But above all, I would urge a study of the methods, by which the Red Cross Societies are kept in touch with the responsible military authorities in peace. Without such intimate relationship, as is seen specially in France and Austria-Hungary, one cannot say that we are likely to advance very rapidly, if ever, in the direction of an organisation, by which the generous sympathy and philanthropic effort of the country can be effectively and harmoniously utilised in war, and,

I take it, that is the object which all, who desire to see the rôle of Red Cross Societies properly recognised, are striving to attain.

Colonel Sir RICHARD TEMPLE, Bart., C.I.E. :—I find I have been specially called upon to speak this afternoon in the name of Lord Breadelbane, who is the Director of the St. John Ambulance Association, and who has been unavoidably detained in Scotland, and, therefore, I suppose, to a certain extent, for the Association itself. Speaking, therefore, with a certain amount of responsibility as to what will fall from my lips this afternoon, I wish to say in the first instance that, personally, I very much congratulate the author upon the lecture he has given us, because it seems to me to be not only opportune, but also to be very much needed. He has told us in that lecture what is a very great truth, namely, that the Red Cross Societies to be effective must be under military authority, and that they must form part of the general medical military scheme. The author has also taught us that independent—and I say independent advisedly—independent Volunteer organisations have failed. They failed on the point of criticism in 1864 at the Geneva Convention, and they have failed most emphatically on several occasions in war and in practice since. The result has been that they have not been recognised by belligerents. Here it strikes me we have the fundamental point of the whole question of Red Cross Societies. Belligerents will not recognise any organisations of which they disapprove, and there is no power on earth that can make any belligerents do otherwise than as they choose. Out of their experience belligerents do not recognise independent volunteer Red Cross Societies, and they will only recognise those which are directly and officially under the opposing military authority, which I think is a great point to bear in mind. To my mind this argument disposes of the whole question. When a nation is fighting, it can only fully employ its Red Cross organisation as long as the other side recognises it; and when a nation is offering its aid to other belligerents, that offer can only be of value if their organisation is recognised by both sides. Any scheme, therefore, that is formed upon any other basis must fail to be of practical value. As we all know, the Red Cross Societies are mostly voluntary, but to be of use they must work with the military authorities. They must be unreservedly placed at their disposal in times of peace, and at the outbreak of war they must form part of the Army Medical Service. The author has shown us, in the very able exposition he has given of the principles of dealing with sick and wounded, the absolute necessity in the first place of outside volunteer organisations placing themselves entirely at the disposal of the military authorities. Next, he has shown us how very technical the subject is, and how much thought and training are necessary to make medical aid effective in war. He has further shown us the certainty of a volunteer organisation failing to become effective and to be anything else but a hindrance to its own side if it is independent. Of course, it is necessary for the Red Cross Societies to prepare for war in time of peace; and it seems to me the whole gist and point of the lecture this afternoon has been that they must, while making their preparations, work hand in hand with the military medical authorities, the very persons under whom they will have to serve in time of war. This seems to me to be a proposition of common-sense, and so far as I am able I should like to make it an axiom for all those connected with the Red Cross. I happen to know something personally of the inside working of Red Cross Societies in this country, and I have been so very insistent upon the points which I have raised this afternoon, because it has seemed to me that many of those who are interested in this very noble work have overlooked the fundamental principles essential to success. If

Schemes of Supplementary Aid, organised
Different Countries to dove-tail into the A
three zones of Military Operations. (All
peace, except those bracketed under Russia, which are prep

RUSSIA.	ITALY.	JAPAN.	AUSTRIA
Official Delegates for improvising. (9 Field Hospitals)			Auxiliar Co (mate (46
Official Delegates for improvising. (157 Auxiliary Hospitals) (7 Depôts of Medical and Surgical Supplies)	Field Hospitals (54 for Mountain Warfare)		Auxiliary (materi (7 of 20 Mobile Me gical Su
		Bearer Columns (3)	Bearer (materi
(Railway Sick Rooms) (10 Refreshment Rooms)	Railway Sick Rooms (44)	Nursing Detachments (Male) (about 35)	Railway (abo
(96 Hospital Trains) (8 Hospitals for Insanes) (1 Hospital for Nursing Sisters) (2 Dental Stations) (3 Bacteriological Stations) (3 Disinfecting Columns) (Laundries)	Hospital Trains (14)		Hospit (
(Hospital Ships) (2) (River Ambulances) (about 2,000 beds in barges on the Amur)	Lake and River Ambulances. (2)	Hospital Ships	Hospi (
			Local Be (126 with 1,
36 Nursing Communities and Permanent Hospitals		Nursing Detachments (about 115)	Nursing D (about 1,10
(Railway Rest Stations)	Railway Sick Rooms (8)	Railway Rest Stations	Railway
(Auxiliary Hospitals) (about 35,000 beds)	Auxiliary Hospitals (48)		Auxiliary (about 10
(Depôts for Hospital Stores) (Depôts for Gifts)	Depôts for Material and Personnel. (12)	Depôts for Stores (1)	Depôts for H
(Information Bureaux)			Convalescent Private Hou (about 32 Information (2
		Preparation of bandages, &c.	

J. J. K. & Co., Limited, London.

d by the Red Cross Societies of
Army Medical Organisation in the
(All these schemes are prepared and kept ready in
prepared only when war breaks out).

...IA-HUNGARY.	GERMANY.	FRANCE.
...liary Transport Columns ...aterial only) ...46 Columns)		
...y Field Hospitals ...terial chiefly) ...200 beds each) ...Medical and Sur-Supply Depôts (2) ...rer Columns ...terial chiefly) (64) ...ay Sick Rooms ...about 112) ...spital Trains (12)	Bearer Columns (303 groups, 22,192 members) Railway Sick Rooms Nursing Detachments (36 groups, 7,358 members) Improvised Hospital Trains	Auxiliary Field Hospitals (54) Railway Sick Rooms (88).
...Hospital Ship (1)		
...l Bearer Columns ...ith 1,827 members) ...ing Detachments ...t 1,100 members) ...lway Sick Rooms ...iliary Hospitals ...out 19,000 beds) ...for Hospital Stores ...lement Homes and ...ate Nursing Homes ...out 32,200 beds) ...rmation Bureaux (3)	Bearer Columns Nursing Detachments Railway Sick Rooms Auxiliary Hospitals Depôts for Gifts Government Homes Private Nursing Homes Information Bureaux	Railway Sick Rooms. Auxiliary Hospitals (about 20,000 beds) (Depôts for Gifts)

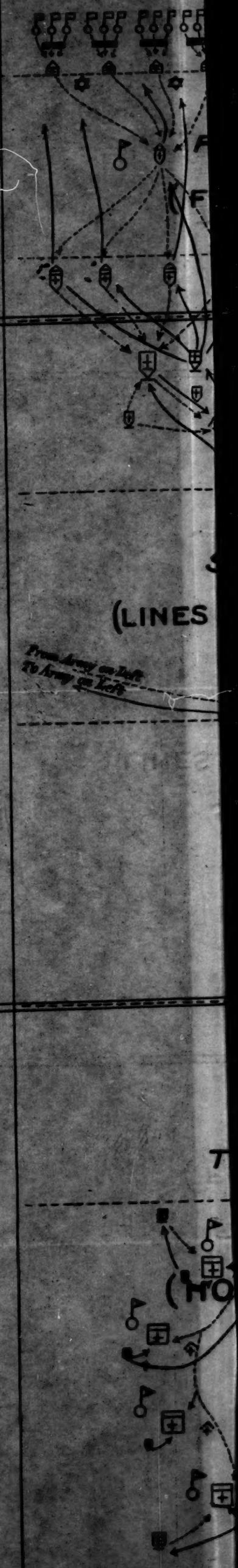
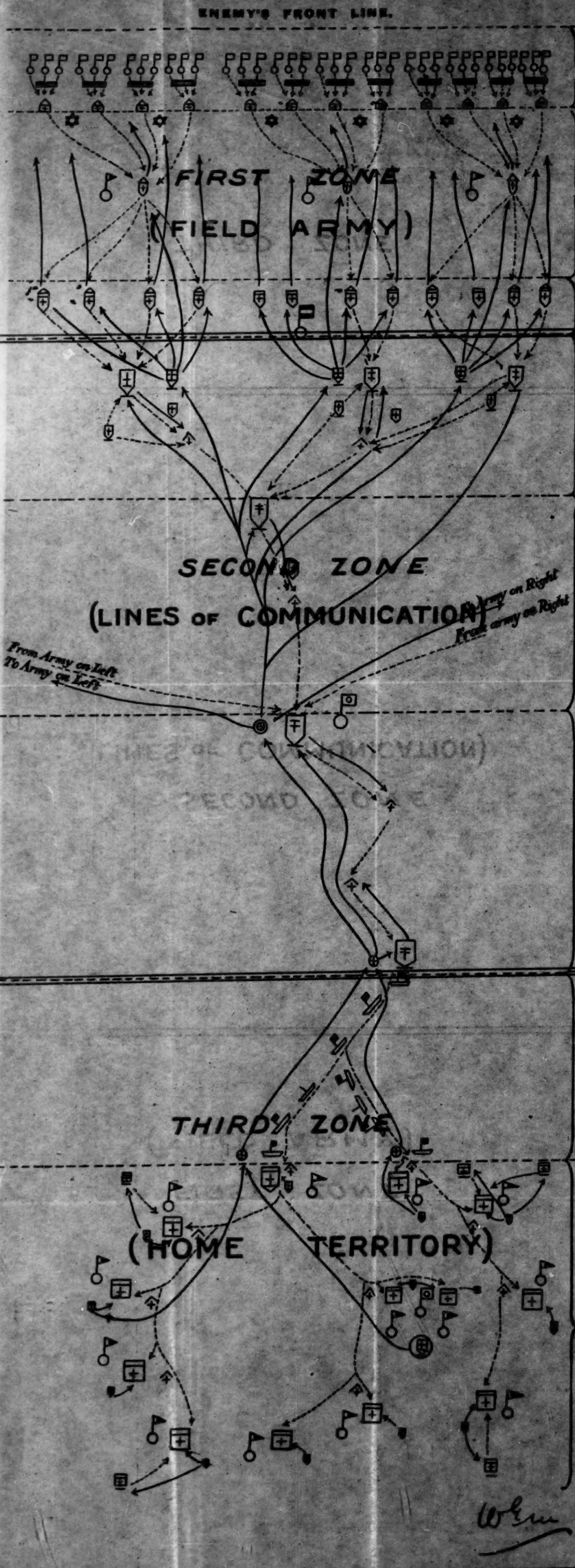


Diagram of the Official Medical Organisation of
of Three Divisions in the Field.

(Taken from the Japanese Organisation.)



# of an Army

ESSENTIAL MEDICAL SERVICE. Assistant Stretcher Bearers: Relief Posts and Temporary Dressing Stations.

RVICE OF THE BEARER BATTALIONS AND DRESSING STATIONS.

ELD HOSPITAL SERVICES.

NE OF COMMUNICATION SERVICE.

ONT SERVICE. Stationary Field Hospitals, and Rest Stations, with Reserve Medical *Personnel*, Sick and Wounded Transport Service and Medical and Surgical Reserve Depôts.

AR SERVICE. Line of Communication Hospitals. Service on Line of Railway with Refreshment Rooms and Rest Stations, and Medical Service with Station Staff. Sick and Wounded Transport Department unit.

ERAL LINES OF COMMUNICATION for more than one Army. Line of Communication Hospitals, Rest Stations, Hospital Trains and General Supply Depôt.

ANSPORT BY SEA. Hospital Ship Service.

OME TERRITORY. Reserve Hospitals; Fortress Hospitals; Central Medical and Surgical Supply Depôt.

Conventional Signs used in the Diagrams.

= Regiment of three Battalions.

= Brigade Head-quarters.

= Division Head-quarters in Field, or Depôt Division in Home Territory.

= Head-quarters of the Army in the Field.

= Imperial Head-quarters of the Field Armies (or General Staff in Home Territory).

= Temporary Dressing Station.

= Bearer Battalion Dressing Station.

= Field Hospital (open).

= Field Hospital (closed).

= Reserve Medical Personnel Unit.

= Sick and Wounded Transport Dept. Unit.

= Medical and Surgical Reserve Depôt.

= Rest Station, or Refreshment Rooms.

= Stationary Field Hospital.

= Line of Communication Hospital.

= Fortress Hospital.

= Reserve Hospital.

= Central Supply Depôt in Field.

= Embarkation and Disembarkation Depôts.

= Central Medical and Surgical Supply Depôt.

= Depôt Division Supply Depôt.

= Hospital Ship.

= Transports, carrying Sick.

= Line of Evacuation.

= Line of Supply.

= Distribution of Reserve Medical Personnel.

our Voluntary Medical Aid Societies are to be effective, we must first work in touch with the military authorities in time of peace, and, secondly, we must unreservedly work under the military authorities in time of war. Having secured these two cardinal points, we may then with a certain amount of safety give rein to our national love of independent action, and collect the materials, the men and the funds, which the military authorities require, in any way we like. I think we may take it for granted that any Red Cross work that is conducted upon any other lines than these is doomed to failure. As regards the organisation with which I am personally identified, I feel sure—and I think our old friend, Sir John Furley, will be with me in feeling sure—that I am voicing the desire of the Order of St. John of Jerusalem of England when I say that we wish to co-operate with the military authorities in every way so far as our peace work is concerned, and we wish also to co-operate with them in securing the co-ordination and the consolidation of all Red Cross work in such a manner as to make it effective in time of war.

The CHAIRMAN (Sir H. Perrott, Bart.):—It only remains for me to formally close the meeting. I am sure you will all agree with me that we have had a most valuable and interesting paper read to us. It is valuable in more ways than one, but especially because it collects together, in a limited space, practically all the knowedge that is wanted to be known by the public at large about the Red Cross Societies of the civilised world. And this knowledge is especially useful at the present time, because the British Red Cross Society which has been referred to in the lecture, and by Sir Richard Temple, is now making an endeavour to form, throughout every county in England, a county organisation by means of which the ladies of the county are asked to take some steps which may be of use in organising local effort to aid the sick and wounded in war—steps which may be organised in time of peace so that when war breaks out this organisation will be ready to afford assistance without waiting till the last moment. That was the original idea of the National Society for Aiding the Sick and Wounded in War which developed into the British Red Cross Society. However, no very prominent steps in that direction were taken, and that led to the formation of the St. John Ambulance Association. But what I wish to point out is, that the contents of this paper will be most instructive to all these ladies and others connected with the various county organisations of the British Red Cross Society, of which their Majesties the King and Queen are the patrons. It will point out to them what they can do in order to create an organisation which may be of use when war breaks out. At this late hour of the afternoon it is unnecessary for me to detain you any further, except to say that I am sure I am only expressing what everyone in the room must feel, when I say we have had a most interesting and most graphic lecture read to us by Colonel Macpherson. Perhaps I may also be allowed to say that I hope it will be a source of greatest interest to all of us; and I feel that if this paper can be as widely circulated as possible all over the country, in order that those who take any interest in Red Cross matters may see exactly what is being done in other countries, and may reap from it information which will be effectual in the event of hostilities, this paper will be of the greatest use to our armies in the field. On behalf of all present, I offer to Colonel Macpherson our very cordial thanks for the interesting lecture he has given us.

THE VON LÖBELL ANNUAL REPORTS ON MILITARY MATTERS IN 1906.

Précis from the German by Lieut.-Colonel E. GUNTER, *p.s.c., late East Lancashire Regiment.*

(Continued from October JOURNAL, p. 1262.)

PART II.

REPORTS ON THE SEPARATE BRANCHES OF MILITARY ART.

INFANTRY AND COMBINED TACTICS, 1906.

A.—WAR EXPERIENCE AND QUESTIONS OF GENERAL INTEREST.

By Lieut.-Colonel BALCK.†

THE conclusions drawn from the Russo-Japanese War in last year's Report have been confirmed by later publications from Russian sources. It is in small affairs only that free choice of ground is possible. Modern Armies, fighting in masses, necessitating attack in the open, require not only thorough training but intelligent adaptability to the circumstances of each case and great skill in leading. But the attack still remains the stronger form. Dragomirov's training system was not a failure, only he under-estimated the effect of fire and the value of formations. The essence of his teaching, that it is the spirit not the form that gains the victory, proved true. It was the spirit and determination of the Japanese which led to their victories. The decision to attack must not always depend on numerical superiority but on the general situation. But victory on the battlefield must be prepared beforehand in the hearts of the people.

It is an open question whether in the short space of two years' service the qualities necessary to victory in battle can be so inoculated as to retain their virtue after that service. In South-West Africa we employed selected men. Fighting against murderous savages who take no prisoners and massacre the wounded, calls forth the strongest efforts and most determined courage. The British in the Boer War owed many a surprise to the fact that the men knew they were fighting against civilised enemies. If our two years' service is too short for the inculcation of the necessary military qualities, then a course of military tuition must be instituted between the time of leaving school and of reaching the Service age.†† This will not make soldiers, but will sow the seed of military instincts.

† The most celebrated German writer on military organisation and tactics of the present day, whose report is well worthy of study.—E.G.

††This is in accordance with the proposals of The National Service League.—E.G.

The question of military instruction has made most progress in Japan and Switzerland. Lord Roberts has been very active and successful in England, and it has been discussed in France.

The chief difficulty in military training lies in battle practice, and in the individual teaching of each soldier to appraise his rifle correctly. The attacker must to a certain extent allow the defender to lay down the law as to his opening fire. A general "chief fire position" has not proved efficacious. Once the Infantry of the attack opened fire, it was continued until the defenders' fire diminished, and so a further advance became possible. Now, utilising the ground has proved of especial value. A suitable dress, hardly distinguishable from the ground, is indispensable. Khaki is unsuitable for Europe.

As to formations, close order is unsuitable in open country under hostile fire. Where weapons or firers are inferior, thick lines of skirmishers are required for the firing line; thin lines are best for movement. Every effort must be made to maintain control by the officers, but under heavy fire this is confined to those men within close reach, so each man must be trained even in peace to act independently, as in Italy. Fire effect against men standing or moving upright has increased in efficacy, that against intrenched or hidden men has decreased, owing to smokeless powder. Only a determined assault can in the end decide the fight. Troops are, however, often deceived as to their fire-effect. If prematurely rushing forward in consequence of this, they begin to suffer heavy loss; they must throw themselves down and begin anew the fire-fight. Battles are hereby prolonged.

Hence it is necessary to utilise the hours of darkness to carry the firing line forward, and also for the decisive assault, supplying the men amply with ammunition, which is impracticable by day. The Japanese had 270 rounds per man, including that carried by the company ammunition mules, and these were insufficient. The Russian plan of sending men back out of the firing line for ammunition led to skulking. It proved best to empty the ammunition carts just before an action and to let the Ammunition Reserves close up at once. Rifle, bayonet, and spade have all played their part and proved indispensable, according to circumstances. Bayonet fighting is of value as physical training, and as encouraging the spirit of the offensive.

The Rusian *normal attack*, with a "chief fire station" 400 metres from the enemy, which had been practised in the open, failed at once in broken country. The Japanese, on the other hand, allowed their leaders, even subordinate, a free hand, only demanding of them a correct judgment as to the treatment of each case. This does not mean entire freedom from tactical principles. Under certain defined circumstances, certain kinds of ground, certain methods must be practised so that they are instinctively adopted by the troops in action. For instance, certain fighting formations are at once assumed on coming to open ground or broken cover, for wood fighting, for village combats, and for night attacks. The Japanese tried to open out on a wide front as soon as possible to envelop their enemy and bring all their rifles into action. They often halted half-way for breath; but the Russians took no advantage of these dangerous pauses. They kept their men in deep formations as long as possible, and thereby lost a lot of men who never fired a shot. Kuropatkin, in

his order of the 28th August, 1904, went so far as to say the best way to be prepared for all eventualities is to keep one-half of the force, whatever its strength, in reserve. This disposition of troops by depth before the commencement of the battle is justified, but the Russians maintained it throughout the action.

The modern battle makes increased demands on the bodily and mental powers of each man. The Japanese always laid aside their valises before going into action. The continuous strain on the nerves of these long-drawn-out battles necessitated frequent supplies of warm food. The Japanese managed to give their men fighting at Sandepu† and Mukden† warm food three times a day and once in the night.

At the battle of the Shaho the long frontal attack necessitated much use of the spade by the attackers. This may, however, be easily overdone.

In the Franco-German War the German Infantry were all trained on the same plan. Now there is a tendency to specialise: to scout for oneself, to have one's own messengers, etc. Hence Mounted Infantry. In the British Army small Battalions of these are attached in war to Cavalry Divisions. They were intended at first to make up for the deficiency of divisional Cavalry in all Armies. This is only justified in Colonial wars, to spare the Infantry rapid marches in the heat, where the enemy is mounted and easily scared by sudden rifle fire. The Russians had some in the Far East attached to Infantry, their Regiments having permanent Mounted Infantry Companies, about 145 strong, trained with them in peace. These did good mountain service.

Snow-shoe Detachments are trained in Austria and Italy. But the length of column these necessitate is against their tactical employment, though their rapid movements are favourable to it. They travel 9 kilometres (5⅝ miles) within the hour on the flat. The Italians have some excellent Cyclist Companies. The 7th Bersaglieri Regiment, starting from Milan, covered 609 kilos. (381 miles), over the St. Bernard passes, doing 76 miles a day, in marching order, for 5 successive days. There they recommend having 4 Cyclist Companies attached to each Cavalry Division for scouting.

As in England, Italy makes much use of Cyclist Volunteer Companies.

INFANTRY AND COMBINED TACTICS.

The difficulty of the ammunition supply still asserts itself. Motors drawing ammunition wagons have not answered over soft muddy roads. It is easy in war to obstruct motors. In peace this cannot well be practised, because of the danger to their occupants. Kuropatkin had 20 automobiles with his Head-Quarter Staff, but nothing is known of their performances. How far traction trains will solve the transport difficulty, is as yet not quite known. The Allen traction train is said to save 300 yards in length of transport column, and about 80 horses. An Army Corps would only want 5

†See the JOURNAL, January, 1907, pp. 71-75.—E.G.

such traction trains, total length 1½ kilometres (1640 yards), with 50 Army Service Corps men.*

Machine gun tactics are as yet somewhat obscure. They are everywhere recognised as important aids to Cavalry and Infantry. They are weapons of *opportunity*. That is, they must be reserved for certain phases of the fight. For flanking effect, and use against high targets in view for a few moments only, they are of great use. They are unsuited to a long fire-fight with a low objective. The Pompoms are useful as aids to rapid range-finding. Japan, America, England, and Russia incline to distributing machine guns in sections to regiments, while in Germany and Austria they are regarded as a Fire-Reserve in the hands of a commander. This does not preclude their being detached by sections when required. The experiences of the fighting in the late war at decisive range justifies the former method. The danger lies in the regiments using them up too soon. The combined method is applicable to the attack and counterstroke. The detached method to defence. Machine guns must at once be brought up on the occupation of a position, to steady the necessarily disordered Infantry.† Their best use is in pursuit, in covering a retreat, and with independent advanced cavalry. 6 machine guns to each Infantry and Cavalry Division seems a suitable number. Carried on mules, ponies, etc., they would gain in mobility; but they are not so quickly brought into action. In action with Cavalry the method of gun-draught is perhaps best. In Switzerland they always march with the first Ammunition Reserve. In Germany and Austria sledge-carriages (traineaux) are used for their transport.

B.—INFANTRY IN INDIVIDUAL STATES.

Austria-Hungary.—The tactical training of the Austrian Infantry has reached a high standard, thanks to a drill book, which is thoroughly modern. Cover is skilfully used for the approach, and the endeavour to combine the different units according to their respective tasks in the attacks was noticeable.

The new Chief of the Staff has issued a new (3rd) edition of "Infantry Drill." His leading idea is, that every man should know what to do in every situation he finds himself in. Instruction and practice must go hand in hand.

General Minarèlli warns officers in his "Reflections on the Wars of South Africa and in the Far East" against over-estimating the strength of the defensive as well as against the effect of manœuvring. Numbers are important, enabling powerful flank attacks to be made, and he asserts that on the decisive front 5 Battalions, three-fourths of a Squadron of Cavalry, and 15 to 18 guns per kilometre, are required to ensure success.

In the Imperial Manœuvres in Silesia,†† which began on the 1st August, 1906, carried out by the I. and II. Army Corps, much useful work was done. The Cavalry reconnaissance, reporting, etc., was good. Unfortunately, the constant intervention of the Umpire

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**Neue Militärische Blätter*. 3. XII. *Militär Welt*. 1906. VIII.

†This seems very sensible, and it would be well if a short direction to this effect were added to *Combined Training*, Sec. 121, sub-sec. 3.—E.G.

††See also the JOURNAL for December, 1906, p. 1556.

Staff, who, among other things, forbade a night attack which might have led to decisive results, their insistence on a day of rest, a daily line of demarcation, the announcement in orders each day of the hour of commencement on the next, and other unrealities, deprived the leaders of good opportunities of showing their mettle.

The Infantry evinced good training and fine marching power. They did not fight on an over-extended front. Dismounting 3 whole Cavalry Regiments of the 3rd Cavalry Division, on the 3rd September, to strengthen the Infantry fighting line, seems scarcely an example to be followed. The organisation of Corps Artillery enabled great Artillery masses to be formed without interfering with the action of the Divisional Artillery in the 3 Divisions composing the Army Corps. Engineers were made little use of. The telephone was much used; Infantry telegraph patrols and the Artillery telephone, worked by the Howitzer Artillery Regiment, worked well. Both Army Corps used motor wagon train of 3 heavy wagons, carrying a load of 3,000 kilogrammes (about 3 tons).

In these manœuvres much use was made of false telegrams, and of other means of spreading false intelligence, to practise both parties in being alert as to these *ruses* so frequent in war.

The average day's work of the motor-trains was about 60 kilometres (37½ miles) on good roads.

In Dalmatia combined Army and Navy manœuvres took place. A mixed Brigade landed at the mouth of the river Ornbla, pushed forward to Trebinje and the hill country, showing, although the manœuvres were not completed, how difficult it is to drive out a hostile force that has once made good its footing in hilly country, if its fleet has command of the sea and can supply it.

France, 1906.—The chief interest at manœuvres was centered in the "Infantry drill." The troops generally deployed for attack at 4 or 5 kilometres (2½ to 3⅛ miles) from the enemy. It was not a regular deployment at the halt, but the troops seek to approach the enemy under cover of the ground at the same time. Skirmishers, weakly extended and not covering the whole front, try to reach a favourable fire position within 800 metres of the enemy. In the IInd Corps each man had a shovel, and made good use of it. Major Hoppenstedt speaks of the characteristic French attack, as showing careful distribution with a tendency to reconnaissance in force and many detachments. A desire for prescribed forms is evidently felt by many of the writers on the attack. The offensive spirit is inculcated. Group fighting is said to be the method of the future. General Langlois emphasises the necessity of simultaneous unity of action between Artillery and Infantry. The *rafales* (sudden outbursts) of the former enables the fighting line to rush further forward or the second line to reinforce the first. Lieut.-Colonel Fumet has brought out a much simplified *Règlement*, which has been tried and approved in the 14th Brigade for its simplicity.

Germany.—General von der Goltz writes in his second edition of "Rossbach and Jena." Even the South African War raised doubts as to whether we are following the right path in carrying out the Infantry combat, or whether our long dense lines of skirmishers, closely followed by supports, will not be annihilated by groups of riflemen carefully concealed in the folds of the ground, etc., as the old Prussian line was by the fire of the French *tirailleurs*. But

the German Infantry can look with satisfaction on the performances of the Japanese Infantry in the late war under difficult circumstances. Were they not trained on the German system?†

The outcome of the experience of the fighting in the Far East has been assimilated in the new issue (29th May, 1906) of our "*Infanterie Exerzier Reglement*" (Infantry Drill).†† There is no change in our well-established fighting principles, but it endeavours to gain time for battle training by its greater simplicity. It also allows greater latitude, by which a higher development of the tactical art can be attained. The so-called "rapid fire" is abolished. The *Zug*††† is more than ever the "fire-unit" of Infantry. In attack the Infantry skirmisher must try and get as near to his enemy as possible. It is best to keep the *Zug* as long as possible together as a strong fighting line, and only under unfavourable circumstances will it be necessary to break up into half *Züge* or groups. Important changes have been made in the Company organisation. The Company is formed in two ranks and then divided from right to left into permanent groups of 4 files. These files are formed into 3 *Züge*, not always of equal strength. The old "section-column" is now called the "group-column," with a front of 4 files. From this the column of march is formed, the depth of which is not to be increased without orders.

The "company-column" consists of the 3 *Züge*, each in column of groups at 9 paces interval. The regulation Battalion formations are confined to the smallest limits now. There are only two column formations; the *Tiefkolonne* or Column of Companies, †††† and the *Breitcolonne* or Line of Companies, the latter in *Zug* column or "Company Column." Movements in Battalion are made without keeping step. Orders are given by Company Commanders, unless the Battalion C.O. orders the word to be taken from him when in close order. Regiments and Brigades are commanded on the same principle.

Part II. treats of combined action with Cavalry and Artillery. Careful reconnoitring and use of ground are required. The danger of going too far in this direction, as the French do, is avoided by allotting *gefechts streifen*, or sections of attack, with approximate limit of frontage, to the larger tactical bodies, from the deployment for attack up to the assault. Within these limits each higher leader must utilise the ground, and act in concert with his neighbour.* All are warned that peace manœuvres must necessarily be carried out

†This was true at the outset, but surely the victories of the Japanese Infantry are due to the remarkable intelligence with which they adapted their methods to the particular circumstances of each case and to their extraordinary courage, self-devotion, and perseverance. At the same time, their careful preliminary training by German officers must be acknowledged.—E.G.

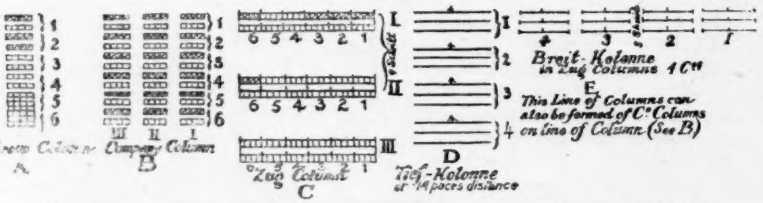
††The former Infantry drill, with a few modifications, had been in force for 15 years and 8 months.—E.G.

†††A "Zug" is a sub-division of about the third of a company, Züge are not of equal strength always; each contains a certain number of groups. If over three groups, they are divided into half Züge.—E.G.

††††Not to be confused with company-column. (See diagrams opposite.)

*Frontage is not laid down, but 164 yards is given as about that of a company at war strength, 1,600 yards as that of a Brigade.—E.G.

much quicker than in war. The word *Haupt Feuerstellung* (chief fire position) has disappeared. Deployment for attack straight from the column of march is not recommended. It is considered that though the spirit of the attack should be inculcated, the French have overdone this, which may lead to shock tactics, while the German principle, "fire is everything," is the correct one. Find out the key of the enemy's position and overwhelm it with fire. Then it will fall.



The German *pace* is 80 cm. (31½ inches) long in *quick* time, 114 to the minute, which is about 2½ miles an hour.

The German *pace* is 75 to 90 cm. (29½ to 35½ inches) long in *double* time, 170-180 to the minute, according to ground, 158 yards a minute, 1 mile in 11 minutes.

Great Britain.—The Report notices the issue of new Mounted Infantry drill in detail, its equipment of pom-poms, the training time, etc. The issue of secret instructions from the camps at Aldershot and Salisbury Plain, as the outcome of the British experience of the Russo-Japanese war is commented on, especially as regards the working forward the attack by digging shelter trenches, which are completed by the supports as they come up, and the firing line rushes or creeps forward, etc. It remarks that this is only possible to troops amply supplied with portable intrenching tools.

Major-General Pilcher's lecture at Aldershot is epitomised, and his division fighting front of 1,600 paces given without comment; and Sir Ian Hamilton's warning not to overdo extension is repeated. "Nothing in the war in the Far East justifies the idea that vigorously defended positions can be taken by thin lines of skirmishers. For this they must be imbued with natural qualities which the habits of life in Great Britain do *not* engender. Sir Ian blames the leading lines for rushing the position without waiting for their supports. Before this is done every yard of front of attack should be occupied by a rifleman. It is easy, however, to teach soldiers to be over cautious, but it is a critical matter to lead such against the enemy."

Russia.—The old Musketry Instruction of 1899 has been much altered, in accordance with recent war experience. Firing in the prone position is prescribed and low targets are recommended. Shooting standing is no longer practised in training. Quick and accurate shooting are inculcated and practised after advances in quick and in double time. This latter practice, which was regarded as advanced individual battle-training practice, is now included in the ordinary target practice.

It is doubtful if a new Infantry drill will be issued in 1907. Since the war, efforts are being directed to individual training and the teaching of self-reliance. Most of the District Commanders have issued memoranda of instructions based on the experience of the late war. Those of General Skalon at Warsaw are noteworthy as em-

bodying more modern ideas than heretofore. Cover and intrenching night attacks, etc., are regarded as essential. Stress is laid on practice in passing orders, etc. Reconnaissance is particularly enjoined. When within 6 versts (4 miles) of the enemy's position, all the Battalions about to attack are to break up into companies. At 5 versts ($3\frac{1}{4}$ miles) the Companies break up into *Zug-schlangen* (*lit.* snakes), *i.e.*, is in fours with unequal distances between the columns. At 4 versts ($2\frac{2}{3}$ miles) all closed bodies extend. From 5 to 6 versts, cover is carefully utilised, so as to prevent the enemy observing the approach, the formations, etc. The Companies have a fighting front of 140 yards. The depth from the firing line to the Reserves is about 800 paces (about 623 yards).† Fire is generally opened at 2,200 yards, and from 1,570 yards it increased according to the targets offered, until from 466 yards to 380 it attains its greatest intensity. From this point the severest task of the attack begins. Forward rushes without cover lead to terrible loss. The firing lines must work forward gradually, digging themselves in and making use of earth, stones, small sandbags, or anything. As the bayonet cannot be used yet they must work forward somehow to within 20 or 10 paces of the enemy. The skirmisher must therefore never part with his intrenching tool. The bayonet attack need not be made simultaneously all along the line. In open ground those parts of the line which are not actually assaulting support their comrades by their fire.†† Frontal attacks must be supported by simultaneous flank attacks. The most effective way of delivering these is to bring up the flanking Detachments under cover. Then *suddenly* open fire with these. The attack may be shortened by a night advance to within 450, or if possible 300 yards; dig cover by night; then rush the position in the early grey of the morning.

In defence, an active defence and constant reconnoitring are insisted on. Large Reserves are to be kept in hand for counter-attack. Rallying positions are to be prepared to guard against envelopment, machine guns dispersed in pairs, advanced positions taken up by small bodies with machine guns, etc., to compel the enemy to early deployment. No Artillery Reserve is now to be kept, and the guns are to reserve their fire chiefly for the attacking Infantry.†††

Switzerland.—The projected new Infantry drill is much discussed. Strict discipline and training, now somewhat slack in Switzerland, are demanded.

"Our training does not give that adhesive force required. The leaders have no confidence in the flexibility of their troops, and his commands have no moral force; the attention of the men is not rivetted on their leader as it should be; our training will not make timid hearts fight for the Colours to the last breath."

These and similar expressions now find vent. Major Sonderagger, in his "*Ungebremster Infanterie-angriff*" (Unfettered Infantry

†The Russian *pace* is 27·6 inches long, but the writer has apparently calculated for the German schritt.—E.G.

††This does not seem very clear; men actually assaulting a position at the point of the bayonet would gladly dispense with the well-meant but possibly badly-aimed fire of their collateral comrades at this juncture.—E.G.

†††Officers wishing for an amplification of the Von Löbell Report here epitomised will find it in the JOURNAL for December, 1906, p. 1562.—E.G.

Attack), inclines to General von Scherff's views. The one thing to be assured must be that when brought in front of the enemy, the leading idea of the soldier should be the irresistible longing to "get at him." His plan of attack is based on thick lines of skirmishers across the whole field of action of each unit, continued pressure of the Reserves from behind; then full liberty of action for the firing lines without any limitations beyond those imposed by the enemy's fire. Once launched to the attack, the attacking force should not be shackled by considerations of neighbouring troops or of the General Reserve. The principle which has often guided the supporting troops who are to fight a demonstrative action has been apparently to keep as far from the enemy as possible. This does not help the attack. The author objects to such half-measures, but demands a determined straightforward energetic attack directly the force is deployed for this, and then the demonstrative attack should cease. Unity of action should be the guiding principle.

COMBINED TACTICS IN INDIVIDUAL STATES—MANŒUVRES, &c.

France.—*La France Militaire* criticises the Corps Manœuvres of 1906† as being too cut and dried. They were not on a large scale. The criticism says it would be better to hold manœuvres on a large scale once in three years and smaller ones of mixed Brigades, etc., every year. In the first the strategical and tactical phases must be so managed that the unexpected may happen and surprises occur on the battle-field; contrary to that method which now obtains, by which everything is prepared beforehand: orders, bivouacs, and cantonments, supply, and the fighting. In the manœuvres of the IInd Corps the encounter battle was excluded, one side being told off from the first for the defence, the other for the attack. A night attack on a large scale was planned but not carried through. The one Squadron of Divisional Cavalry provided for each Infantry Division proved quite inadequate, though cyclists were also added for the messenger service. On the 1st September the 1st and 5th Cavalry Divisions attacked hostile Infantry from many sides. First 8 Squadrons attacked the hostile right flank, in front, flank, and rear, while 40 Squadrons, making skilful use of ground, came up within 500 metres and then attacked in successive lines. The impression they made was such that the hostile Cavalry Brigade did not move forward, but calmly awaited their onslaught. The Artillery almost overdid the practice of coming into action under cover. It did not attempt to engage the hostile guns, but from the first directed its fire against their Infantry. It boldly accompanied its own Infantry in the close attack.

Germany.—The Imperial Manœuvres, 1906, were held S.E. of Liegnitz between the Weisse and the Oder. There is no room here to describe the manœuvre from the 10th to 13th September which the Report details. It, says *Streffleur*, characterises the German attack as one of energetic advance during the Artillery action, narrow fronts, distribution by

†For the projected French manœuvres of 1907, see the JOURNAL for June, 1907, p. 792.—E.G.

depth, dense lines of skirmishers, who were late in opening fire; Reserves kept in close order until shortly before the assault. The German Cavalry acted firmly in the belief of the possibility of its employment with success in battle. The English critic in the "United Service Magazine" blames the objection of officers and men to take cover and to intrench. The close intervals of the attackers under hostile fire are criticised. According to the writer, the German soldier is the same wooden disciplined automaton that he always was. Initiative on the part of the men is not only disliked but prohibited. The fear of responsibility on the part of the company officers is remarked on. Without long far-reaching orders they are now a ship without a rudder, etc.

The Report says that *Danzers Armee Zeitung* contradicts all these, and justifies the German troops, praising their self-reliance, etc., as evinced in the manœuvres. It says that the Silesian Infantry was at war strength, which accounts for the dense lines of skirmishers, as at manœuvres losses cannot be represented.* The English criticism also blames the over-haste with which the issue was reached. It blames the Cavalry always longing to attack, their individual want of skill in reconnaissance, their absolute ignoring the effect of hostile fire. That is much the same in all Armies.

The French criticisms were much more favourable, but they, too, remark that the German Infantry and Artillery are much less trained in taking cover than the French.

New signalling regulations have been issued. The Field Fortification Manual takes account of the latest weapons. Groups of works are recommended in place of continuous lines. Stress is laid on masks and invisibility. Formerly too early strengthening of the ground was considered disadvantageous. Now it is only required of leaders that entrenchments shall be no hindrance to fresh enterprise, should the "situation" alter. As regards choice of position, this must be such as to compel the enemy to attack or to make a turning movement favourable to the defenders' designs.

The idea that the Artillery shall form the framework so that the Infantry must corform to it is new. But both must throughout labour for co-operation. In contrast with the Russian Regulations, only one line is constructed, and advanced positions only exceptionally. The tactical employment of cyclists is dealt with in the *Felddienst-Ordnung*" (Regulations for Field Service), each Infantry Regiment has 19 cycles, each Cavalry Regiment 5. On good roads and in favourable weather 20 to 30 miles a day may be expected of them. A third edition of Major Balck's "*Gefechtslehre*" (Vol. v. of Taktik), (Battle Tactics, Berlin, 1907) takes into account the lessons of the Russo-Japanese War.† Major I. Hoffenstedt's "*Die Schlacht der Zükünft*" (The Battle of the Future) is an excellent book, giving lessons in applied modern tactics, worked out on the ground of the German Imperial Manœuvres of 1905.††

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*It does not say why losses could not be simulated.—E.G.

†This valuable work should be studied by all officers as one of the ablest of recent publications by a master of the art.—E.G.

††These took place on the upper Rhine in the neighbourhood of Langenschwalbach.—E.G.

CAVALRY TACTICS IN 1906.

General.

The employment by Cavalry of the latest technical appliances opens a wide field of activity to this arm, which is being extended year by year. That Cavalrymen should be made acquainted with modern methods of communication is, therefore, an important part of their training. Unfortunately, no Cavalry reconnaissance rides were held in Germany last year on a large scale. The increased importance of their service in gaining intelligence by no means detracts from that of their fighting efficiency. For it is an essential condition of their gaining intelligence that they should be able to defeat hostile cavalry and to protect their own communications. A Cavalry which from the first avoids engagements can, like Mounted Infantry, hold certain points, and thus to a certain extent screen the movements of its own side; but it will never be able to reconnoitre successfully those of the enemy. It is remarkable that those States who were opposed in the late campaigns to an enemy whose Cavalry was either non-existent or inferior should have used their own Cavalry as Mounted; whereas in France the contrary spirit prevails. There it is recognised that the lance may still play a decisive part in battle; but their idea that by skilful manœuvring they will be able to gain the hostile flanks is scarcely likely to be realised against so well-trained a body as the German Lancers. The latter will therefore seek this decisive mounted action. With its higher leaders will lie the essential duty of concentrating for this purpose, at the right time and place the reconnoitring advanced Cavalry, which has been spread over a wide front. Superiority in dismounted action is also necessary and more training in this is required, for no sensible Cavalryman now denies the value of this. We recognise many defects in this part of our training, and our cavalry require a rifle more akin to the Infantry weapon. Nor can we overlook the necessity of an increase in the rifle ammunition to be carried by Cavalrymen.

In like manner is a less conspicuous uniform required, such as that of the British Cavalry. Cavalry cannot dispense with a better firearm, even for its other work. They may even decisively influence the issue of a battle if, as in the Imperial Manœuvres at Liegnitz in 1906, they succeed in working round the hostile flanks and rear with machine guns. For this purpose several Cavalry Divisions must be united, for in this case, as in every other, sufficient force must be employed if success of any value is to be attained. The same remark applies to the employment of Cavalry in the charge. Great masses are required to ensure great success. Future battle-fields will be of wide extent. The opportunities of collecting the Cavalry for such efforts *en masse* will doubtless be fewer. But as long as surprise is possible or the exhaustion of Infantry ammunition within the probabilities, Cavalry need never despair of success, even with the *arme blanche*.

Cavalry in Individual States.

Austria-Hungary.—Particular attention was paid last year to the rifle instruction of the Cavalry in accordance with the Musketry Instruction Regulations of 1905. Two instruction squadrons were

formed for this purpose at the Bruck Camp. Much use was also made of dismounted practice during the manœuvres of the larger bodies in 1906. The importance of the action of machine gun detachments with Cavalry was confirmed at these manœuvres. As a novelty, an armoured automobile was experimented with for reconnaissance. It succeeded in surprising the enemy in their quarters. This may, however, be attributed to peace conditions, which would not obtain in war.

Cavalry manœuvres on a large scale were renounced last year for financial reasons. At the Imperial Manœuvres in Eastern Silesia, however, the 61½ Squadrons which took part in them found ample employment.

Belgium.—New Field Service Regulations issued in 1906 somewhat modify the Cavalry outpost service, which had by those issued in 1904 been somewhat hampered by a cut-and-dried normal procedure. Now anything like a "scheme" is forbidden. Advanced Cavalry push forward Cossack posts in front of the Infantry outposts, and may be supported by stronger detachments using dismounted action to prolong the resistance. Officers' patrols move forward in front along the important roads. These were formerly not employed. It is recommended that mixed detachments of Infantry and Cavalry be employed, and especially that the Cavalry shall have cyclist detachments with them. The Cavalry that took part in the Autumn Manœuvres were criticised for their want of activity in battle.

France.—It has been proposed to reduce the French cavalry and increase the Field Artillery by abolishing the 5th Depôt Squadrons of the Cuirassier Regiments, and reducing the Chasseurs d'Afrique by two regiments. Some even demand the total abolition of Cuirassiers. General de Négrier is decidedly in favour of reducing the Cavalry and of their employment as Mounted Infantry, while Generals Langlois, Gallifet, Kessler, Bonnal, Donop will not hear of any reduction. The doctrine that Cavalry will play a decisive part in battle is firmly held by French Cavalry officers and by many others in France. It is besides considered necessary to be able to oppose the German Cavalry with at least equal numbers. With the present reduced terms of service, it is considered impracticable to increase the numbers of lances; so to make up for the preponderance of the German Lancers in battle, endeavours are being made to devise the most efficacious tactical form of attack. This was tried in the manœuvres of 1906. The 6th, 7th, and 8th Cavalry Divisions each held separate Cavalry manœuvres lasting 11 days. The 2nd and 4th were exercised under General Trémeau near Verdun in combination with Infantry and Cyclist Companies. The chief interest was, however, concentrated on the Greater Cavalry Manœuvres, conducted by General Burnez, in the Arcis-sur-Aube district, which lasted from the 26th August to the 5th September. Four of these days were occupied in the 1st Division operating against the 5th Cavalry Division, each being supported by Infantry and Artillery. The desire to bring about a decision by mounted action was in each case apparent, and very little use was made of the Cavalry dismounted.

The Report says the French manœuvre attack was not a success. It presupposed complete inactivity on the part of the hostile 3rd line. It refers to the *Militär-Wochenblatt*, No. 152 of 1906, for details. The progress of the French Cavalry in utilising ground is much

praised. The attack against Infantry was carried out by a number of Squadrons in extended order, who attacked them in front, flank, and rear in order to draw off their attention from the main Cavalry attack in close order. This is said to have been successfully done. Only two troops were allowed as escort to the Artillery, which is insufficient. The want of machine guns was felt. Three folding boats on the Veyry system† are carried by each Cavalry Regiment, and one wagon. A bridge of 70 metres (77 yards) length can be constructed from these.

Germany.—The Report laments the retirement of the late able Cavalry General, Edler von der Planitz, Inspector-General of Cavalry, to whom the German Cavalry is much indebted for keeping up for many years the Cavalry spirit. In 1906 a new musketry instruction for Cavalry was issued in accordance with that for Infantry issued in 1905,†† and is an evidence of the value attributed to Cavalry training with the rifle.

A new Riding School for officers has been started in Paderborn. This was much required, and it is hoped it may be succeeded by others. No Cavalry reconnaissance on a large scale as in 1905 was carried out, but it is evident that the lessons implanted by these bore fruit. The disappearance of "strategic" patrols with the reconnoitring squadrons is generally approved. The tactical reconnoitring at the manœuvres was not a success. It was hampered by formalities which impeded quick observation, prompt decision, and rapid transmission of reports so necessary in the short time at disposal. The main point is to train patrol leaders to quick decision and initiative, and not to hinder this by too severe criticism as to forms and the correct filling up of the "Patrol Book."

The Report gives a *résumé* of the Cavalry action in the Imperial Manœuvres near Liegnitz, detailing the various bodies engaged. For this there is no space here, as it occupies five closely printed pages; but Cavalry officers might find it worth while to translate it for THE CAVALRY JOURNAL. The performance of the Cavalry Pioneers, and their mobility, are much praised, while the tool wagons are found fault with.

Great Britain.—The efforts to turn the British cavalry into Mounted Infantry seem to have reached their culminating point. The reorganisation of the British Army showed the necessity of having well-trained Cavalry for reconnaissance, and even in England it is allowed that Mounted Infantry is unable to oppose Cavalry on horseback. This does not lessen their value for Colonial wars. But if Mounted Infantry is to play a part in European warfare, it can only be by its employment *en masse*. But in England they will not hear of its increase. On the contrary, two of the Schools for Mounted Infantry have been abolished. The new Mounted Infantry Regulations, issued in 1906, tend to depreciate its value, contrary to the spirit of those published in 1904.††† The Cavalry spirit is at the same

†Described in previous years. (See the JOURNAL for November, 1906, p. 1395.—E.G.)

††See the JOURNAL for November, 1906, p. 1390, and footnote.—E.G.

†††See *Militär-Wochenblatt*, No. 7, of 1907; *Army and Navy Gazette*, 2405, 2433; "Manual for Mounted Infantry," 1906; *United Service Gazette*, 3841.—E.G.

time regaining its ascendancy. As Mounted Infantry is being relegated to its proper place, so is the idea of Cavalry attack gaining in ascendancy; but it will be a long time before it regains its true Cavalry spirit, for no actual reversal of tactical views is perceptible. The last manœuvres show, on the contrary, how much dismounted action has grown into a habit.

FIELD ARTILLERY TACTICS.

General.—The Reports now to hand from the Russo-Japanese war may be taken as fairly reliable as a foundation for tactical principles governing the employment of Q.F. field guns with protective shields, Shrapnel shell has not proved worthless as some said. It has, where used in accordance with its nature and capabilities, fully come up to expectations. At the same time, the necessity of field howitzers or mortars has been established. Eye-witnesses testify that the Japanese howitzers were extraordinarily effective in those cases where shrapnel fired by ordinary field guns were not so, especially against the Russians in deep trenches and rifle-pits at Liao-yang, the Shaho, Mukden, and Port Arthur. The Russian field mortars were not effective, but that does not lessen the value of high-angle fire. These have now given way to field howitzers, which are now being adopted by the Russian as well as other Armies, so that question is decided.

Next comes the question of ammunition supply. Much has still to be settled, both as regards its increase and simplicity. The idea of devising special shells to break through the shields failed, as it would not have furthered but hindered this simplicity. Now experiments are being made with a combined common and shrapnel shell, "Brisanzshrapnel,"* so as to have a general utility projectile, and the results are eagerly look for. If the effect of the combined shell will not be less than that of the separate shells, and if the danger of explosions or prematures will not be increased thereby, then the gain in simplicity and supply will increase the fighting power of artillery. The expenditure of ammunition in the war exceeded expectations, though the Artillery was not really quick-firing according to our present ideas. The Report here enters at some length into the question of 4 *v.* 6 guns in a battery, and the number of ammunition wagons, etc., chiefly from the point of view of outmatching the French Artillery. There is not space here for this or the proposals of General Rohne regarding 4-gun batteries, it being a technical Artillery question; but the Report is not on the whole in favour of any change.

The Report also goes into the question of direct fire in the open, indirect fire from cover, etc. It says that the striking successes of the Japanese on certain occasions were essentially attributable to their better Artillery service; yet it is, on the whole, with the Infantry that the decision will finally rest. The idea that the Artillery duel was finally exploded by this war is not favoured. Support of the Infantry

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**Neue Geschosse für die Feld-artillerie.* Rohne, Generallieut. *Militär-Zeitung.* Berlin, No. 14, 1906. *Brisanz-Geschosse.* Von Reichenau, Generallieut. *Militär-Wochenblatt,* 92, 1906.—F.G.

from first to last must be by Artillery action, and the Artillery duel is one of its means to effect this. Though Artillery may be concealed, observation posts are not, and the Japanese made special efforts to destroy these. The Artillery of the attack must, speaking generally, engage that of the enemy, as no one can expect the Artillery to leave its cover and support its Infantry in every case when the opposing guns are not even weakened. Without successful Artillery action there will be no successful assault. It is a fallacy to affirm that shield-protected Artillery can advance arm-in-arm with the Infantry to the assault. If the supporting batteries are not well sheltered by the ground, their detachments are mown down before they can really make use of the shelter of their shields.

Field Artillery in Individual States.

France.—A change has again been made in the system of commands. Now the 2 Artillery Regiments are again placed under the command of the Brigade instead of the Divisional Commanders. In war, Corps Artillery is formed by collecting together 1 H.A. Brigade Division of 2 Batteries and 3 Field Artillery Brigades of 3 Batteries. The foreign officers who witnessed the French Autumn Manœuvres last year speak of the skilful use made of cover by their Artillery. The batteries came up singly into action, and their presence was often undetected until they opened fire. No use was made of the field telephone or signalling, the Battery Commander guiding the fire by word of command from a short distance in front and to the flank of the battery. The shields were too small and hardly protect the detachment from either shrapnel or rifle bullets.

In France there is great fear of being outnumbered by the German Artillery, and it is proposed by some to increase the guns of an Army Corps to 120 guns, and this even in peace. The number of guns in a battery must either be increased to 6 or 7 new Battalions of 4 guns each, formed in each Army Corps. The Report discusses the Artillery attack procedure.

Germany.—The new Field Artillery Drill is not yet available to the public, so our Report is limited to the criticisms published in magazines in 1906. The new Infantry drill no longer demands rigid adherence to the principle that an artillery duel must always precede the Infantry attack:—"The attacking Artillery must, *during the advance* of their Infantry, while engaging the hostile Artillery, endeavour to concentrate an overwhelming fire on that part of the enemy's position that is to be assaulted." The Heavy Field Artillery drill, however, seems to hold to the old principle of engaging the hostile Artillery solely, as in the Artillery drill of 1899. In the Infantry drill, however, the following principles are laid down:—In the encounter-battle it is desirable not to open Artillery fire until the Infantry advance begins, in order to keep the enemy as long as possible in uncertainty as to the point of attack If the enemy takes up a defensive attitude, the Artillery opens fire immediately it is ready. If the hostile Artillery is to be overwhelmed, the Infantry advance is not simply dependent on the success of this; general circumstances decide. The attack of an intrenched position must often be carried out by night. Careful systematic reconnaissance by day of

the Artillery positions and approaches. The attacking Batteries are to move forward under escort and open fire by day, continues it through the night, and towards daylight increases its intensity. Single Batteries move forward under cover of the night to closer positions to destroy obstacles and support the Infantry advance as long as possible after dawn. Combined with this fire the Infantry and machine gun fire keeps the enemy under cover until, all the obstacles being destroyed, the assault can take place.

In a demonstrative attack, on the other hand, the Artillery is to be deployed in strength but at greater distance in order to avoid decisive action. The co-operation of Artillery and Infantry is not to be separated either by time or distance. Though, as a rule, Infantry should keep 600 metres in front of their Artillery, the Artillery need not cease firing on level ground because their Infantry is only 300 metres in front, and Infantry must get accustomed to their Artillery firing over their heads. If observation is difficult, then the Artillery must cease fire when their Infantry is within 300 metres of the position, and it then directs its fire on the enemy's reserves. Officers must be sent forward by the Artillery to keep up their combined action with the Infantry, and to signal back to the Batteries, especially as to what distance the Infantry line is from the position. The Heavy Artillery have first to overwhelm the hostile guns and then to bombard the point of assault, so as to pave the way for the Infantry assault. Great stress is laid on this in the Heavy Artillery drill.† But the defender's Artillery must be so far silenced as to prevent his hindering this bombardment. Cover for Artillery is to be made careful use of. Where existing, it is to be improved, and if there is time screen-batteries, masks, etc., are to be constructed. Observers are to be well forward and carefully concealed. On the defensive, mirrors are to be made use of and observations constructed.

On the 1st January, 1907, General Rohne's monthly Artillery Journal appeared, and has continued, thus filling a want long felt in the German Army.

Great Britain.—A Provisional Field and Heavy Artillery Training was issued in 1906. This includes gunnery instruction, fire tactics, and discipline, as well as drill and manœuvre, which in our Service are separate. The Report gives the technical directions for shrapnel, etc., firing at some length, and the chief tactical rules for the support of the Infantry are briefly given.

Japan.—For the opening of the attack the Field Artillery is to be provided with as much common shell as practicable. These batteries are generally taken from the Divisional Artillery. They are to be connected by field telephone with the Commander of the Force if possible. If not, by frequent messengers. The Infantry is sent forward 1,000 metres beyond the Artillery to protect it, to dig itself in, and to open fire as soon as the guns are in position. The attacking Artillery should if possible move forward by night and intrench so as to open fire at daybreak simultaneously in view, in the first place, to draw the fire of the enemy. It pushes forward patrols to reconnoitre and to watch the fire effect. When the preparatory fire has made the enemy disclose his positions, effective fire

†In Germany Heavy is not included with Field Artillery as in the British Army.—E.G.

is opened on his guns. Should the fire from these slacken, the attacking Artillery turn their fire on the enemy's Infantry to support the advance of their own. The Infantry meanwhile intrenches itself within 700 yards of the position. Certain guns are then pushed forward to within 1,500 metres to destroy the enemy's machine guns with common shell. Part of the guns accompany the Infantry close attack, for until the hostile Artillery is subdued it is impossible for the Infantry to reach decisive rifle fire distance, which is considered to be 400 metres to 300 metres from the position to be assaulted. Then the Artillery fires uninterruptedly until the obstacles and works are destroyed, then upon the reserves and wagons. Ammunition supply can only be carried on during the close attack by night. The supporting Artillery should take position so that it can continue its fire on the works, etc., up to the last moment before the assault. Then it fires on the interior of the position, the Reserves, and their approaches, etc.

Russia.—The Report goes into technical details of the new Field and Mountain Battery Training Regulations, for which there is not space here. General Scalon's views are given. But Lieut.-Colonel Njesnamov is of opinion that an Artillery duel will no longer take place in war. As soon as the attacker has begun his really effective fire, the garrison will be sent under cover. The attacker will then save his ammunition. Then the defender will open fire again, and so on. The example he gives is that of the 1st Russian Battery on the 12th October, 1904.† The present procedure of the Artillery of the attack should be to constantly *threaten* that of the defence to prevent it firing on the advancing Infantry or on Artillery or Cavalry on the move.

The great range of modern Artillery enables it to concentrate from a distance the fire of dispersed groups of guns, and this renders unnecessary the formation of long lines of guns, which always afford a good target. Changes of position are only justifiable in the attacking Artillery at a distance of over 3,500 metres. In other cases it is better to remain where they are. And it is then better to bring into action Batteries from the Reserves to reinforce those in front, which will also have a better moral effect. No Battery should be without its Infantry escort. Half a Company is sufficient when in position, 1 Company when on the move.†† It is dangerous and useless to leave the ammunition wagons near the guns. The shells must be carried up by hand. If the service of the guns is quietly carried on without flurry there need be no fear of running short of ammunition.

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†This was the date of the battle of Yentai, and retreat of the Russians behind the Shaho.—E.G.

††The companies of the Russian Infantry are about 250 strong in war. —E.G.

(*To be continued.*)

THE IMPORTANCE OF SECRECY IN WAR.

NOTES BY AN OFFICER OF THE RUSSIAN GENERAL STAFF.

By Lieut.-Colonel P. I. IZMESTIEV, General Staff.

Communicated by the General Staff.

INTRODUCTORY.

MUCH has been said by various writers as to the defective information regarding the enemy possessed by the Russians during the course of the recent war.

It would not be difficult to refute such assertions by producing documentary evidence and a list of the sources from which information concerning the enemy was derived. But to do so would show our cards to the enemy, whereas the whole system of military intelligence should remain secret.

The object of this monograph is to show that during the recent war too much was made public on the side of the Russians; and that the Japanese were thereby assisted in obtaining information concerning the Russian forces.

An explanation of the importance of secrecy may be of use even in time of peace, especially so at the present time, when the military Press teems with discussions concerning necessary reforms in the Army. It must not be forgotten that the Japanese study the Russian Military Press closely, and it is, therefore, desirable to maintain a clear distinction between confidential and non-confidential matter.

A.

Notwithstanding the fact that at the commencement of the war a number of articles in various newspapers exhorted the Russian Press to be extremely cautious and guarded in any statements concerning the Russian forces in the field, and notwithstanding the example of the 1870 campaign, the Russian Press published to the world everything that had to do with the Russian Army.

Not only the mobilisation of individual units and their despatch to the Far East, but even plans and intentions with regard to such movements were immediately flashed to Western Europe and published in Russian newspapers.

Anyone who cared to do so might have compiled a fairly accurate "graphic" time-table of the movements and concentration of troops by consulting the newspapers and the information given concerning the transport of units on their way to the Far East, the telegrams notifying their passage of the Urals, arrival at Baikal, and even their arrival in the theatre of operations. And it was not only the non-official civilian Press which sinned in this respect. Even the official military organ, the *Ruskii Invalid*, published all orders issued by the

Russian War Office. Every formation of a new unit, with the dates of the commencement and completion of the formation, was given to the world.

Every case in which "reserve" troops were mobilised to take the place of "field" troops despatched to the front was notified in the *Ruskii Invalid*. Lists of killed and wounded officers, with the units to which they belonged, were published after every action.

How important this information was to the enemy is shown by the fact that shortly after the battle of Hei-kou-tai a Japanese newspaper published a detailed "Order of battle" of the Russian troops which had taken part in it, with quotations from the lists of killed and wounded published in the *Ruskii Invalid*. Of course, the Japanese could have ascertained the same details from the shoulder-straps of the killed, but the fact remains. Every trifle is of importance to an observant opponent.

The following is an example:—

As early as the spring of 1904, *La France Militaire* mentioned the intended despatch to the theatre of war of the Vth and VIth Siberian Army Corps. No order upon the subject had been published, but the *Ruskii Invalid* gave the names of officers appointed to command army corps and divisions. From this the French paper had been able to deduce with accuracy the actual composition of the new army corps.

It is only by the same indifference to secrecy that the publication of the XVIIth Army Corps Order, dated 31st July, 1905, in the *Ruskii Invalid* of the 18th August can be explained.

From this order the enemy was able to infer the following facts:—

1. That the 1st and 2nd Armies were placed in front, and the 3rd Army in reserve.
2. That the XVIIth Army Corps formed part of the 3rd Army, and that its headquarters were at Hsiao-cheng-tzu.
3. That the cavalry of the 3rd Army was at Chen-chian-tun, maintaining connection with General Mishchenko's force.

The order referred to above was published on the 18th August, when the chances that peace would be concluded were still uncertain. International telegraph cables annihilate distance; but even granting that the enemy might not receive information from Europe in time for it to be of value, the local Russian papers in Manchuria were even more culpable than their European contemporaries as regards the disclosure of information.

The *Manchurian Army Gazette* especially distinguished itself in this respect, although there was a censor's department, controlled by an officer of the General Staff. That paper published news which enabled the enemy to deduce not only the composition of the Russian forces, but even the arrival of reinforcements.

The following instances may be quoted:—

In No. 212 of 1905, the Commander-in-Chief's telegram reporting his inspection of the newly arrived 4th Rifle Brigade was published.

In No. 245 the Commander-in-Chief's orders were given with regard to the inspection of the Foot Cossack Brigade and the Caucasian Cossack Division, which had arrived in the theatre of operations.

In No. 225, Headquarter Orders were given concerning the inspection of the Vth, XVIIth, and IXth Army Corps (of the 3rd Army), and the Xth and VIth Siberian Army Corps of the 2nd Army.

In another number of the same paper we find an order by General Kaulbars, in which he takes leave of the Ist Siberian Army Corps, which was leaving his command to join the 1st Army, and welcomes the VIth Siberian Army Corps, which was joining the 2nd Army from the 3rd Army.

It would be easy to multiply these instances of the publication of orders, but I now pass to another kind of intimation published, *i.e.*, the "greetings" habitually inserted and addressed to the relatives and friends of the rank and file, and to comrades in other units. A few specimens may be given, in which the unit, division, army corps, and army are described in detail:—

No. 232[1].—VIIIth Army Corps, 2nd Army.

No. 247.—4th Rifle Regiment of the "Rifle Corps," 2nd Army. 2nd Chita Regiment of the IIIrd Siberian Army Corps, 1st Army.

No. 251.—1st Stryetensk Regiment of IInd Siberian Army Corps, 1st Army.

No. 255.—3rd Rifle Brigade, 3rd Army.

No. 261.—7th Rifle Regiment, 2nd Rifle Division—1st "Rifle Corps," 2nd Army.

No. 263.—9th Rifle Regiment, of 3rd Rifle Division of 2nd "Rifle Corps," 3rd Army.

No. 266.—1st Rifle Regiment of 1st Rifle Division of 1st "Rifle Corps," 2nd Army.

No. 271.—14th Rifle Regiment of 4th Rifle Division of 2nd "Rifle Corps," 3rd Army.

No. 272.—XVIth Army Corps, 2nd Army.

From the extracts quoted above, the following data concerning the composition of the Russian armies were deducible:—

That the 1st Army consisted of the IInd, IIIrd, IVth, and Ist Siberian Army Corps, and the Ist Army Corps.

That the 2nd Army consisted of the XVIth Xth, VIIIth Army Corps, the VIth Siberian Army Corps, and one Independent Rifle Brigade (which ultimately became a division after 1st June).

That the 3rd Army consisted of the Vth Siberian, IVth, and XVIIth Army Corps, the 2nd "Rifle Corps" (composed at first of two brigades, and later of two divisions).

The Kharbin newspapers even published the positions of the troops.

In short, the Censor's Department of the Headquarter Staff apparently had no clear idea as to what kind of information might be given to the public, and what might not. It was not until the 22nd June that the publication of the names of the units to which individuals inserting their notices belonged was put a stop to.

These newspapers were on sale at the stations and in the towns, and it was easy for the Japanese to obtain copies.

More than once I had occasion to detain suspicious Chinese characters, upon whom were found copies of the *Manchurian Army Gazette*. It is obvious that valuable corroborative information was afforded by this source for the purpose of supplementing the reports received from scouts or spies.

[1] *i.e.*, No. of the issue of the newspaper in question.

It is essential that definite and very strict rules with regard to military censorship should be worked out in time of peace and come into force the moment that war is declared.

Great Britain has recently set the example in this respect. The British Government has appointed a Committee which, in conjunction with journalists, is to elaborate a special law on the subject.

B.—The Immense Amount of Correspondence.

The greater the amount of correspondence in the field, the more complicated and slow is the transmission of orders, and the more difficult becomes the custody of documents, the harder it is to separate confidential from non-confidential matter. The staff was overburdened with correspondence, and it in turn overburdened the troops with it.

For instance, returns showing the distribution of the troops had to be rendered to the Headquarters Staff every week. Where an army of from four to six army corps was concerned, this represented great and futile labour. It would have sufficed if the changes in distribution, which had taken place since the previous return, had been notified. The system adopted was doubtless the most convenient from the point of view of the Headquarter Staff, but the work of the staffs of armies was increased out of all proportion.

The work connected with the compilation of lists of names for rewards and decoration aws also immense.

The general and inevitable result was that secret documents became engulfed in the flood of correspondence and came into wrong hands.

Our hidebound methods of correspondence are aptly illustrated when orders are transmitted by telephone and telegraph. Copies of all messages had to be kept, both at the transmitting and receiving stations, and this was most inconvenient, as there was not always time to encipher messages. Besides this, we had several cipher codes, and the decipherer was often puzzled to know which code had been used. The keys were changed after Mukden, and those in use, together with cartloads of correspondence belonging to Headquarters, fell into the enemy's hands in this battle.

The Staff of the 3rd Army suggested that, as a matter of principle, no copies of telegrams or telephone messages should be kept at the offices, but this suggestion was strongly opposed by the votaries of red tape. It would seem, however, that a simple diary (showing the number of the message, from whom, to whom) would suffice for record.

Army orders were not issued classified according to their contents; but, in view of the fact that they contained all sorts of orders concerning the troops, such classification was very desirable. With true Russian slackness, these would be left lying about; they would be forgotten, and might easily fall into the hands of the enemy.

It seems desirable that a regulation should be introduced to the effect that every unit and Staff should detail an officer whose special duty would be, before quitting a bivouac, to destroy all indications which might show the enemy what unit had been there, *e.g.*, newspapers, envelopes, letters, postal wrappers, etc. A marked distinction should be made, even in time of peace, between secret and non-secret correspondence. At present, in the Russian Service, a list of rewards or prizes, and a scheme of mobilisation, are both sent with the same inscription "Secret," which leads to a serious depreciation of that most important word.

C.—Finger-posts on Roads, Sign-boards, and Shoulder-straps.

After the battle of Mukden, finger-posts were to be seen on every road with inscriptions such as: "To Headquarters, —th Army Corps," "To Headquarters, —th Division," etc. This was hardly calculated to make the collection of information by the enemy more difficult.

Let us grant that this was due to the absence of maps of the country to the north of Kai-yuan, but no one thought of removing the sign-posts when maps became available.[1]

The craze of staes and units for finger-posts and name-boards was almost incredible. One saw name-boards not only of the larger units but of companies and batteries. The headquarters of a certain army corps were adorned by a large board showing the number of the corps, and with smaller boards "Operations section," "Inspection section," and so on.

The enemy's spies can have had no difficulty whatever in ascertaining what troops were quartered within a specified zone; they had only to go round and note what they saw written large upon these boards.

After the first few actions, the Japanese removed shoulder-straps from their uniforms—a valuable source of information as to the units present. They soon removed the metal figures from the collars of the uniform of their reserve troops as well. Meanwhile the Russian troops were trying to keep up their numerals and letters and ciphers strictly in accordance with regulation, and General Linevich expressed displeasure at the remissness of commanding officers in this respect. This order of the Commander-in-Chief is incomprehensible when we remember that the Intelligence Department of his own Staff issued a memorandum describing the Japanese methods of ascertaining what troops were quartered within a given area. Their method was to divide the whole of the ground occupied by the Russians into sections, and a certain number of spies (or scouts) were sent into each of these sections. The duty of these men was to collect information as to how many Russian troops were within the given area, and what shoulder-straps they wore.

It is a question whether the stencilled letters, etc., upon our shoulder-straps should not be replaced by metal numbers which could be removed on service.

D.—The Rear of the Army.

The further a man is from the front and the less his danger, the more gossip and scandal he talks, the more he boasts, the more readily he criticises the troops and their generals, the more greedy he is of news, and the more he exaggerates what he hears. In this respect the rear of the army is the worst of all.

While the Russian forces were on the Sha-ho, the Mukden railway station was like a club, where officers assembled and decided in advance the issue of the campaign. News from the front was distorted by ardent imaginations and spread broadcast. Native loafers and Chinese officials were always hanging about. The smallest movement of troops became known in Mukden station, which meant Mukden and (*viâ Hsin-min-tun*) the Japanese.

[1] In the 3rd Army the roads were numbered, and the numbers only appeared on sign-posts.

For example, on the 13th January, 1905, I myself heard at Mukden station that the 2nd Army was to advance on the 25th January. It may reasonably be assumed that this information was also known to the Japanese, and the fact that the date of the intended second Russian advance on Shen-tan-pu (25th February) was known beforehand to the Japanese strengthens this probability.

There was a restaurant, too, near Mukden station, where foreign attachés, Press correspondents, and a legion of orderly officers used to congregate. Some of the latter did good work in the field, such as an officer of the General Staff might be proud of, but they were very few. Most of them were mere medal hunters. General Linevich decorated two such orderly officers who joined the army after Mukden and were never once at the front.

These orderly officers were the principal disseminators of gossip, and retailed what they had heard from their generals. There were as many as ten and fifteen of these orderly officers attached to various general officers. They led an idle existence, were a nuisance to the Staffs, and caused a dearth of officers with the fighting units. Always clean and dandified, they were included in the general term "Staff officers," and gave the regimental officer an entirely incorrect impression concerning the life and work of the real Staff.

The method of selection of orderly officers requires alteration. They should be appointed temporarily, and not permanently, and in strictly limited numbers.

E.—Defective Supervision of the Chinese Population.

Under the circumstances attending the campaign, it was obviously necessary to keep a very sharp eye upon the local inhabitants. Nominally, measures were taken with this view. Lengthy orders were issued on the subject, but they remained a dead letter. For instance, it was forbidden to admit Chinese into the Russian positions, but at that very time Chinese labourers were employed in the construction of fortifications. Plans of the forts were given to Chinese contractors, and the forts themselves were in charge of Chinese watchmen. Chinese were constantly coming from the south, and were allowed to pass the Russian outposts. Immediately in rear of the Russian lines they were entirely free, and moved about (beggars, pedlars, etc.) at their own sweet will. Chinese jugglers were much appreciated during the winter by the troops in their earth shelters. They used to ask for testimonials, and passed on from unit to unit; they might have given the Japanese very detailed information as to the Russian dispositions.

The writer once had occasion to detain a strolling company of this kind. During the first night of their arrest two of them tried to cut their throats with razors. They were sent under escort to the rear as suspicious persons, and six weeks later were again stopped by Russian Irregulars in Mongolia. They then went back towards the Japanese lines. The inference is obvious: they had been set at liberty on the first occasion, and had gone off to the Japanese, and were then returning (with fresh instructions) to the Russian lines, in full faith as to the impunity of their operations. Some of this troop were recognised as jugglers who had wandered about among the Russian forces before Mukden.

In future campaigns a strict rule should be enforced that all local inhabitants within the area of active operations must be registered,

and that each must be provided with a certificate. These passes would have to be verified periodically.

As to the Chinese administration, it may be noted that the Japanese as they advanced at once took the civil government of the country in rear of them into their own hands. They dismissed the Chinese officials and appointed their own men. This enabled them effectively to control the population.

With the administration in their own hands, and enlisting the Chinese soldiers of the area occupied, they drew up very detailed lists of the inhabitants and established a close grip over them. In June, 1905, they drew up a census of all villages occupied by their troops. Each household received a pass, in which was noted the number of the permanent dwellers in his house.

The Russians apparently ignored the venality of the Chinese administration and the necessity for supervision of the officials.

After the Russian evacuation of Mukden, the Japanese deposed the Chinese Governor and appointed a strong partisan of their own. It was his obvious duty to compel the officials under him to render reports of all that happened in those districts which were occupied by Russian forces. There were plenty of Chinese soldiers, employed as police, who would enable the Chinese officials to follow every movement of the Russian troops and to know their strength.

The hostility of the Chinese administrators to the Russians was shown in many ways, and yet they were not dismissed (owing to considerations of policy) and were not even kept under effective supervision. Political considerations were allowed to interfere to the detriment of military efficiency, whereas the Japanese did not allow themselves to be hampered in this way.

F.—Press Correspondents and Military Attaches.

Press correspondents, in their efforts to obtain "copy," forgot that this frequently gave information to the enemy. Moreover, what they published was often not true. Most people have probably seen the scathing criticism, published by an officer of the General Staff, on Mr. Taburno's "Truth about the War." It is therefore unnecessary to notice this "Untruth about the War" here.

In the majority of cases, correspondents were entirely without training or experience for the serious and responsible work they had undertaken. Some of them, in their eagerness for "copy" rather than for truth, were like mere reporters collecting scraps of sensational information.

There were others, full of talent, who described the raid upon Ying-kou while sitting at Kharbin.

Notwithstanding the Military Censorship, which was not up to the mark, information from such correspondents found its way into the Press. Such information, on the one hand, might be of value to the enemy, while on the other, it undermined the faith of the Russian public in the Army, and the Army's faith in its own powers. Some of the information supplied to the Russian newspapers concerning the hardships suffered by the troops had the worst possible effect upon troops and reservists still in Russia.

The selection of Press correspondents will have to be carefully regulated in future. The order against officers of the General Staff acting as correspondents is to be deprecated. The reason for such

prohibition was that such officers are in possession of military secrets. In the writer's opinion, if they know such secrets, they also know how to keep them.

The view will, no doubt, be put forward that the public demand news; they give their sons and their money, and are entitled to demand an account of what is being done with them. The answer to that argument is: Develop true patriotism among the sons of the country, in the sense of a proper recognition of their duty towards their country; give scope to all that is best, free society from drones and idlers, and believe me that then the veil of secrecy will yield to us Russians the same service as it did to the Japanese.

With regard to foreign military attachés, the writer is of opinion that we were too frank and open. Was it to be expected that representatives of nations far from friendly to us should keep secret matters which came to their knowledge? Is it possible to believe that information was not sent to the Japanese through Chinese channels? Such breaches of neutrality are to be found in the annals of military history. It is to be hoped that in future no military attachés or foreign correspondents will be permitted to be present with the army in the field.

To sum up, we see that the Russians, by their own neglect of military secrecy, facilitated the work of the Japanese Intelligence Department. Russian garrulity is, with us, the cause of many violations of military secrecy, both in peace and war. I will not enlarge upon this point, but merely reproduce here what an officer, who had long held the appointment of military attaché, once said to me: "You all talk about military secrecy, but one need only sit in the train from Petersburg to Tsarkoe Selo to hear all that is being done, or even thought of, in the highest circles."

WARS OF THE TURKS WITH THE GERMANS.

By Lieut.-General F. H. TYRRELL, late Indian Army.

Continued from October JOURNAL, p. 1248.

THE FOURTH WAR.

THIS war lasted sixteen years, and resulted in irreparable disaster to the Turks, who were continually beaten in the field, and were finally expelled from the kingdom of Hungary. The science of tactics and of fortification had made great strides among the Christian nations, who now all possessed Standing Armies of professional soldiers; and the invention of mobile field artillery, the flint-lock musket and cartridges, and above all the bayonet, had produced a great improvement in the tactical efficiency of the German troops. The armament and tactics of the Turks, on the other hand, remained exactly as they had stood at the death of the great Suliman, while the spirit and discipline of their troops had sensibly deteriorated during long intervals of peace, and through the general corruption and inefficiency of the administration. Their leaders had formerly been trained in the practical school of continual warfare; now, in default of this training, and having no other means of education, they showed themselves absolutely incompetent, and for three centuries the once warlike nation of the Osmanlis has not produced any example of conspicuous military talent. During the whole course of this war the Turkish Empire could produce no general to match John Sobieski, Charles of Lorraine, Lewis of Baden, and Eugene of Savoy. The war between the German and the Turk was henceforward to be like the contest between a skilled fencer and an untrained club-man.

The primary occasion of this war was the oppression exercised by the German Emperor Leopold I. upon his Hungarian subjects. The Jesuit-ridden Cabinet of Vienna was quite ready to respond to the incitements of Louis XIV. of France to emulate his persecution of the Protestants, and other arbitrary acts and exactions caused the Magyar Catholics to throw in their lot with their injured fellow-countrymen. Conspiracies were hatched and rebellions raised; savage measures of repression were met by savage reprisals; the horrid cruelties inflicted upon each other by Catholic Germans and Protestant Magyars equal anything to be found in the annals of Turkish warfare. A young Hungarian nobleman, Emeric Tekeli, was at the head of a rebellion against the Emperor, and finding his brave but undisciplined Hungarians no match for the German troops, he implored the aid of the Sultan. Two years of the twenty years' truce signed at Basvar had yet to expire, and there was a strong party in the Divan opposed to any breach of faith, even with an infidel Power. But the old spirit of Turkish conquest which had been revived by the 'Kuprili administra-

tion was still in the ascendant, and the advocates of the Holy War urged that the Hungarian troubles of Austria afforded a favourable opportunity for another extension of the Dárul Islam. The Grand Vazir, Kara Mustafa,[1] a vain, rash man, was at the head of the war party, and his influence prevailed with the weak-minded Sultan Muhammad IV. Assistance was promised to Tekeli, the Imperial envoy was thrown into prison, and orders were given for assembling all the forces of the Empire at Adrianople for a campaign against Germany in the ensuing year.

In the spring of 1683 Kara Mustafa set out for Hungary at the head of an army drawn from all the quarters of the Empire. Its resources, which had been well husbanded by the Kuprilis, were now taxed to the utmost to provide men, munitions of war, and transport, and it is said that the numbers mobilised for the campaign amounted to nearly 300,000 combatants and camp followers, with an enormous quantity of pack animals.

The Sultan accompanied the host as far as Belgrade, amusing himself by hunting on the way. There he took leave of the army, investing the Vazir with plenary powers, and committing to his charge the sacred green banner of the Prophet. The Grand Army marched to Essek, where Count Tekeli came to meet the Vazir, and was invested by him with the Dukedom of Austrian-Hungary. A council of war was held, at which Tekeli and most of the Pashas urged the reduction of the German fortresses in Hungary, while the Grand Vazir favoured an immediate blow at Vienna. He crossed the frontier into Austrian territory and invested Raab, where he was joined by 12,000 Tartars, under their Khan, Selim Girai. Another council of war was held, at which Ibrahim, the aged Pasha of Buda, strongly opposed the Vazir's intention of marching upon Vienna. He related a parable of a King who placed a heap of gold on the centre of a carpet, and offered it to anyone who could take it up without treading on the carpet. A wise man rolled up the carpet from the corner, and thus obtained possession of the gold.[2] He likened Vienna to the gold and Hungary to the carpet, and said that before attempting Vienna, Raab and Comorn should first be taken. But Kara Mustafa rejected his prudent counsel, and silenced all opposition by showing the Khatt-i Sharíf, investing him with supreme powers. He left Raab unmolested and directed the march of the army upon Vienna. The Imperial general, Duke Charles Leopold of Lorraine, had invested the Turkish frontier fortress of Neuhausel with an army of 30,000 men; but at the approach of the Grand Vazir's army he raised the siege and made haste to put the Danube between himself and the enemy.

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[1] Kara, *i.e.*, Black Mustafa. The Turks consider an olive complexion with black eyes and hair the highest type of beauty; hence black is with them a *sobriquet* signifying admiration. Kara Othman was the founder of this nation and dynasty, and the dark-browed patriot brigand chief of Servia was by them named Kara George. Byron has made use of this peculiar Turkish epithet in his poem of "The Giaour" in the lines:—

"Black Hassan from the Haram flies,
Nor bends on woman's form his eyes."

[2] This parable is put by the modern Egyptians into the mouth of their own Ibrahim Pasha, the famous son of Muhammad Ali, in connection with the Egyptian campaign against the Wahabis in Arabia in 1812.

The Emperor Leopold quitted Vienna on the news of the approach of the Turkish army, and most of the inhabitants followed the example set by their Sovereign. Some who had delayed their departure too long fell into the hands of the Tartars, who scoured the whole country round, burning and pillaging everything. Kara Mustafa sat down before Vienna on the 13th July, and the city was closely invested on all sides. The garrison consisted of 13,000 Regular troops, among which were six regiments which still figure in the Austrian Army List,[1] the Burgher Guards, 1,200 strong, and about 3,000 armed citizens. Count Stahremberg, the Governor, was a brave and experienced captain, and his skill and conduct contributed much to the successful defence of the city against desperate odds.

The siege was closely pressed for the space of two months, during which the city was cut off entirely from the outer world, and enclosed by a ring of 25,000 Turkish tents. The whole glacis was honeycombed by the semi-circular trenches with the ends over-lapping, by means of which the Turkish sappers worked forward, so that it resembled a gigantic labyrinthine rabbit-warren. In these trenches the Janissaries established themselves with their pipes and coffee-pots to guard against sorties, while the Azabs drove mines under the ditch and threw up batteries and lodgments on the counter-scarp. A continual bombardment was kept up, and numerous partial and general assaults were made, all gallantly repelled by the garrison, who made frequent and often successful sorties, and baffled the besiegers' attempts at mining by counter-mines. At the end of two months the ramparts were reduced to a mass of ruin, and some of the ravelins were abandoned to the enemy. The casualties among the defenders were heavy, and there appeared no prospect of relief; supplies began to run short, and the situation of the city seemed desperate.

The Turks and Tartars had meanwhile spread themselves over the whole country around, sacking and burning the towns and villages. The fate of the small town of Perchtoldsdorf deserves to be recorded as a typical instance of Turkish treachery and cruelty. Its inhabitants had retired into the church, where they fortified themselves against the attacks of the roving bands of the enemy's cavalry. On the 14th of July a Pasha appeared before the place with a strong force of Turks, and sent in one of his men who spoke Sclavonic to offer his guarantee for the security of the lives and property of the defenders if they would surrender and pay an indemnity of 6,000 florins. The terms were too good to be refused, for the besieged had no hope of being able to hold out for long, and the keys of the church were carried on a cushion to the Pasha by the daughter of the Bailiff, a fair girl of seventeen, with her hair flowing loose and a wreath upon her head, in the hope of softening the heart of the barbarian. The men then filed out of the church, and were disarmed and surrounded by the Turkish cavalry. The Pasha then rose from the carpet on which he had been sitting, and gave the signal for massacre by drawing his sabre and cutting down the trembling girl at his side. His soldiers immediately fell upon the defenceless Christians, and hacked them to pieces. The slaughter lasted two hours, more than 3,000 men being butchered in a confined space. Only three escaped to secrete themselves in hiding places

[1] Now numbered the 8th, 11th, 20th, 24th, 42nd, and 59th Regiments of German Infantry in the Austro-Hungarian Army.

until the Turks had departed. The women and children who had remained in the church were all dragged into slavery.

The besieged managed to communicate several times with the Duke of Lorraine by means of messengers who swam the Danube, or passed through the besieging camp in the disguise of Turks; these were Greeks or Sclavonians, who had been slaves among the Turks, and were familiar with their language and customs. Some of these messengers were taken by the Turks, others got through with promises that the Imperial Army should advance to the relief of the city by the end of August; but September came, and the rescue still lingered.

Kara Mustafa has been accused by Turkish historians of purposely protracting the siege in order to eventually obtain possession of the city by capitulation, and so gain the wealth which would have become the plunder of his soldiers after a successful assault; but this theory is not borne out by the facts. On the contrary, he was indefatigable in urging on the siege operations, and by the middle of September the conditions of the besieged appeared quite desperate. The ramparts looked like one wide breach. The number of the garrison had been sorely reduced, and it seemed as if the place must fall; but relief was at hand. Reinforcements from all parts of the Empire had been slowly coming in to the army of the Duke of Lorraine, and he was at last joined by John Sobieski, King of Poland, at the head of an army of 30,000 men, nearly all cavalry.

The danger to Christendom and the solicitations of the German Emperor had prevailed on the Polish hero to come to the assistance of the beleaguered capital, though he was bound to peace with the Turks by the treaty of Zurawno; but the Pope was able and willing to grant him a dispensation from the obligation of keeping faith with infidels. He assumed command of the united Christian Army of Poles, Austrians, Bavarians, Saxons, and other Germans from the Minor States, aggregating 85,000 men, with 186 pieces of artillery. Maximilian, Elector of Bavaria, John George, Elector of Saxony, Ludwig, Duke of Baden, and twenty other German princes of reigning houses, were present with the Imperial troops. Sobieski was much impressed by the appearance of the Saxon troops. He wrote to his wife:—"We may say of the Germans what has been said of the horse; they do not know their own strength." Prince Eugene of Savoy, whose elder brother, Louis, had been killed at the commencement of the siege in a charge of Tartar cavalry, now served as aide-de-camp to the Duke of Lorraine.

On the 6th September a furious assault was made by the Turks upon the city, and was repulsed with a loss to the assailants of 1,500 men. It proved to be their last effort. On the evening of the same day the straining eyes of the watchers on the spire of St. Stephen's, were greeted with the sight of five rockets sent up from the summit of the Kahlenberg. The Christian Army had thrown a bridge across the Danube within fifteen miles of the Vazir's camp, and were in full march for the Kahlenberg before he became aware of their proximity, though the country round was scoured by his cavalry.

On the 10th he sent a detachment to seize the hill of the Kahlenberg; but it was already occupied by six Saxon battalions with three guns, and the Turks failed to dislodge them.

The Vazir called a council of war, the invariable resource of Turkish commanders; Ibrahim Pasha of Buda advised the raising of

the siege and the concentration of all the forces to meet the Christian Army in the field. The Vazir, however, rejected his advice, left the Janissaries and the artillery in the trenches, and drew up the rest of his army in the field between his camp and the Kahlenberg. To make up for his want of good infantry he dismounted some of his cavalry to hold the villages in his front.

The muster-rolls found in his tent after the battle show a total of 165,000 men; but these include not only the Janissaries, Topjis, and Azabs left in the trenches, but also the force blockading Raab, and the troops of the Pasha of Erlau, who had been defeated and killed by the Poles and Germans at Stammersdorf, near Presburg, only a few days previously. Probably the total force with which Kara Mustafa faced his Christian foes was not much above 100,000 men, so the disparity in numbers was not very great.

Sobieski and Lorraine drew up their army of 127 regiments of horse and dragoons, and 57 battalions of foot in three lines of battle, divided vertically into centre, and right and left wings. The right wing was composed of the Poles and some Austrians and Bavarians under the Polish Field-Marshal, Jablonowski. The centre of Bavarians, Saxons, and the troops of the Minor States, under the Electors of Bavaria and Saxony, and the Prince of Waldeck; the left wing of Austrians and Saxons, under the Duke of Lorraine. The whole was under the command of the Polish king, whose position was marked by three ostrich-plumes carried on the point of a lance.[1] Sobieski wore a sky-blue coat, and rode a bay charger; his *suite* gorgeously equipped and caparisoned in the semi-Oriental Polish fashion, quite eclipsed the German Princes and Generals and their staffs by their splendid appearance. The cavalry and infantry were interspersed in the three lines of battle; the guns were in the intervals between squadrons and battalions, but the general advance was so rapid that few guns or ammunition wagons could keep pace with it. The flanks of the army were protected by Croats and other Austrian light troops. Sobieski much deplored the non-arrival of some Cossacks, on whom he greatly counted for their skill in scouting and foraging. The Polish troops engaged in the battle consisted of 35 regiments of heavy and light cavalry, Cuirassiers and Uhlans; and of only 11 battalions of infantry of poor quality; with 30 guns.

On the morning of the 12th September a solemn Mass was performed in the chapel on the summit of the Kahlenberg, and priests exhorted the Christian soldiers to do battle valiantly against the infidels. A red banner, showing a white cross, was planted before the chapel bidding defiance to the red flag of Muhammad, which floated in front of the field tent of the Grand Vazir. The Turkish preparations for the battle were very different; Kara Mustafa had already despatched 6,000 captive men, 30,000 women and girls, and 35,000 children, in droves to glut the Turkish slave markets; but 20,000 more of all ages and both sexes still remained in his camp.

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[1] Sobieski's standard reminds us of our own Prince of Wales's emblem which was adopted from the King of Bohemia, a Sclavonic monarch, like Sobieski. Was this an emblem of command or of royalty among the Sclavonic peoples in the Middle Ages?

He now gave orders for the massacre of all these unhappy prisoners, and his orders were faithfully carried out by his inhuman subordinates. He led out the army to battle, sending his cavalry forward to the foot of the Kahlenberg. He himself took command of the centre; the right wing was commanded by the Pasha of Baghdad, and the left wing, opposed to the Poles by the old Pasha of Buda. A thick mist hung over the slopes of the Kahlenberg, and concealed the movements of the Christian Army. They had the advantage of the ground and of the prestige of the offensive; the Turks were dispirited by being kept to the defensive, and they had no confidence in the capacity of their leader; Kara Mustafa was unpopular with the soldiery, and was on bad terms with most of his lieutenants.

The formation of the ground brought the Austrians and Saxons on the left wing into contact with the enemy some hours before the centre and right wings could deploy their columns; but by noon the battle had become general along the whole line. The sight of the three plumes, which marked the station of Sobieski, struck terror into the hearts of the Turks. "By Allah, the King is at their head!" exclaimed the Tartar Khan Selim Girai, thinking of the day when he had seen the stream of the Dniester choked with turbans floating on it from bank to bank; and he turned his horse's head to seek safety in flight. All through the sweltering heat of the long afternoon the Turks were forced back and back, from position to position, fighting desperately, but without guidance or cohesion, driven before the rolling fire and levelled bayonets of the German infantry and the furious charges of the Polish lancers, till the disorganised mob of fugitives rolled through their camp and along the road to Raab in headlong flight, leaving their tents, guns, baggage, and stores in the hands of the victors. The cannon from the trenches had all day been thundering against the city as before, drowning the noise of the neighbouring battle-field; but now they were silent, the trenches were assailed at once by the Germans from the city and from the captured camp, and all the Janissaries were put to the sword. Altogether 25,000 Turks are said to have perished in the battle and in the trenches; the loss of the allied army is put down at 1,000 killed and 3,000 wounded; but no accurate returns were furnished of the losses of the Poles. The spoil was enormous, 10,000 camels, besides thousands of horses, mules, and oxen, 300 pieces of cannon, 9,000 wagons, and 25,000 tents. The marquee of the Grand Vazir fell to the share of the Saxons, and may now be seen in the Historical Museum at Dresden, along with horse-tail standards, Janissary soup-kettles, and arms and weapons of all kinds, and the rich horse-trappings in which the Turks delighted.

The beaten army was rallied upon the force which had been left to blockade Raab. Here the Vazir halted for three days to re-organise the troops, and he here put to death the old Pasha of Buda, Ibrahim, and two other Pashas and the Agha of the Janissaries, charging the loss of the battle to their misconduct. He reinforced the garrisons of Varasdin and Neuhausel, and then retreated to Buda.

The news of the total defeat of the Turkish Grand Army before the walls of Vienna caused general joy and exultation throughout Christendom, except at the Court of Versailles, where the Most Christian King and his Ministers, who had made every endeavour to prevent the alliance of Sobieski with the German Emperor, were

much chagrined at the escape of the House of Austria from what they hoped and believed to be its impending ruin:—

"Think with what passionate delight
The tale was told in Christian halls;
How Sobieski turned to flight
The Moslem from Vienna's walls;
How, when his horse triumphant trod
The burghers' richest robes upon,
The ancient words rose loud: 'From God
A man was sent whose name was John.'"[1]

All the nations that had so long suffered from the insolence and the aggressions of the Turks now hastened to seize the favourable opportunity for revenge. The Czar of Russia and the Signoria of Venice joined in a quadruple alliance with the Emperor of Germany and the Polish King, and the frontiers of the Ottoman Empire in Europe were assailed from four different quarters at once. While the German Armies invaded Hungary, the Poles besieged Kaminiek. Peter the Great led the Russian battalions, just newly disciplined by Le Fort to the siege of Azof, and the Venetians assembled an army at the island of Santa Maura, destined for the invasion and conquest of the Morea. They hired a whole division of infantry from the Elector of Hanover, and raised a regiment of foot from the Swiss Cantons; the Pope sent a contingent to fight against the common enemy of Christendom, and the gallant knights of Malta once more unfurled against their inveterate enemy the blessed banner of Redemption. The army thus assembled in the Ionian Island presented the strangest spectacle of an armed assemblage ever seen in Europe; there were the Hanoverian Grenadiers in their red uniforms, the Knights of Malta with their scarlet surcoats bearing the white eight-pointed cross of St. John over their mediæval steel panoply, and the Sclavonic soldiers who followed the Lion banner of St. Mark with their semi-Oriental dress and armament. The motley host was commanded by the Venetian veteran, Morosini, who had held the fortress of Candia for twenty-four years against its Turkish besiegers, and the German General Count von Königsmarck, who commanded the Hanoverians' contingent, and whose military skill and experience procured for him the direction of the land operations of the expedition.

The Emperor and the Imperial Councillors and Courtiers showed gross ingratitude and scant courtesy to their deliverer, but Sobieski did not trouble himself to stay long near the city he had saved; as soon as his troops were rested and refreshed, he led them in pursuit of the Turkish Army. The Duke of Lorraine followed with the Imperialists. Sobieski crossed to the north bank of the Danube at Comorn and moved upon Barkan, opposite the fortress of Gran, where the Turks had a bridge and a fortified *tête-du-pont*, which enabled them to operate on both sides of the river. The King's object was to seize the *tête-du-pont*, preparatory to the investment of Gran; but he did not know that Kara Muhammad, one of the bravest and boldest of the Turkish Pashas, had entered Barkan with a large body of cavalry. The Polish advanced guard became engaged with this force and was hard pressed by superior numbers. The King pushed forward at the

[1] "Palm Leaves," by Richard Monckton Milnes.

head of 5,000 horse to extricate it, and found himself confronted by a vastly superior force of Turkish cavalry. Knowing by experience the value of audacity in encountering an Oriental foe, the King without hesitation charged and beat them back; but the numbers were too disproportionate, the Turks charged in their turn and the Poles broke and fled, hotly pursued by the victors. The King's life was only saved by the devotion of his followers, who freely sacrificed their own lives to save him. The mad race of pursuers and pursued lasted over two miles of ground. Two Turks came up with the King, but were shot by a trooper of his escort, and Sobieski's son left his cloak in the hand of a Turkish horseman. The King at length reached the protection of the German cavalry and guns which were advancing to his support, and throwing himself from the saddle, he lay for some minutes exhausted upon the ground.

The Turks were so elated at having put the redoubtable King of Poland to flight that they quite lost their heads, and their partial success, as so often happened, proved their ultimate ruin. The Grand Vazir wrote to Tekeli, who still kept the field at the head of a handful of Hungarians, announcing the total destruction of the whole Polish Army, and Kara Muhammad the next day drew all his forces out of Gran and Barkan, amounting in all to 25,000 men, and offered battle to Sobieski and the Duke of Lorraine, who were advancing at the head of 50,000 Poles and Germans.

The Christians had for once the superiority of numbers as well as of skill and discipline, and the Turks were totally defeated and driven in headlong rout into the fortified *tête-du-pont* of Barkan, which the Germans entered pell-mell along with them; the fugitives crowded on to the bridge of boats till it broke under their weight. Numbers of the Turks were drowned in the river, and those who tried to escape by swimming were shot down by the Germans; the rest were put to the sword.

The Poles, enraged at the sight of their comrades' heads adorning the palisades of Barkan, gave no quarter. The Germans now brought up their own bridge of boats from Comorn to replace the broken one, and crossed the river to invest Gran. They carried the lower town by storm, and the Turks retired into the citadel, where they hung out the white flag, and agreed to surrender the place on condition of being allowed to depart with their women and children to Buda, which terms were granted, and the garrison to the number of 4,000 marched out retaining their arms, and departed for Buda.

It was now the end of October, and the armies took up their winter quarters. Sobieski marched off with his Polish troops to winter in their own land, sweeping the Turks out of the towns to the north of the Danube as he passed through the country. Kara Mustafa led his beaten and dispirited army back to Belgrade, leaving orders for the summary execution of the officers who had signed the capitulation of Gran when they should arrive at Buda. But his own fate was at hand; the Sultan was persuaded that the failure of the siege and campaign was due to the Grand Vazir's mismanagement, and gave ready ear to the complaints of the relatives of Kara Mustafa's victims. The messenger of death met the fallen favourite at Belgrade. His decapitated head was found in a mosque in that city when it was captured by the Germans in 1688, and was sent by them to Vienna and deposited in the Arsenal there, where it may still be seen.

It is related that when Kara Mustafa was at Buda he offered to provide a Jewish merchant, who was proceeding to Belgrade, with a military escort for his protection. The Jew, smiling, drew from beneath his robe a Polish horseman's square cap, and declared that this was a sufficient protection, for any number of marauding Turks and Tartars would fly far and fast at the sight of it. The Vazir sighed, and said:—"It is a true saying that those whom God hath smitten with panic fear even the Jews."

The Sultan appointed Kara Ibrahim to be Grand Vazir, and he nominated his namesake, Shaitan Ibrahim (Ibrahim the Devil, so called by the Turks from the ruses and stratagems which he employed to deceive the enemy),[1] Seraskier or general of the troops in Hungary, and Ainaji Suliman (Suliman the Deceitful), Seraskier on the frontiers of Poland. The Turks were bewildered by having to make head against four powerful enemies at four different points of their frontiers; and, moreover, they had never contemplated the possibility of a defensive war, and had made no preparations for it; their frontier fortresses were in no condition to stand a siege; the garrisons were weak, the magazines empty, the fortifications in bad repair.

The Germans, meanwhile, had made as great an advance in military engineering and in the science of the attack and defence of fortified places as in field tactics; consequently, when they resumed the war the Turks' fortresses fell one after the other into their hands.

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[1] From the absence of surnames, and the paucity of Muhammadan proper names, the Turks were constrained to distinguish individuals by some species of nickname or *sobriquet*; sometimes a place-name, as Kuprili; sometimes a characteristic as Deli (Brave) Ahmad; sometimes from some personal peculiarity, as Shishman (Fat) Ibrahim; or from an employment or occupation, as Baltaji Muhammad (Muhammad the Halberdier). Some of these names were hardly complimentary, *e.g.*, Kara Jahannum Ibrahim (Black Hell Ibrahim), the appellation bestowed on the terrible Captain-General of the artillery, who mowed down the Janissary mutineers with grape and canister in 1826.

(To be continued.)

NAVAL NOTES.

Home. The following are the principal appointments which have been made: Rear-Admirals—A. M. Farquhar to Command of Portsmouth Division of Home Fleet; the Hon. S. C. J. Colville, C.V.O., C.B., to Command of the Chatham Division of the Home Fleet; J. Denison to Command of Devonport Division of Home Fleet. Captains—J. de M. Hutchinson, C.M.G., to "Devonshire"; C. F. Henderson to "Crescent"; A. L. Cary to "Prince George"; T. W. Kemp, C.I.E., to "Europa." Commander—M. H. Hodges to "Sappho."

The flag of Vice-Admiral Sir F. C. B. Bridgeman, K.C.V.O., which has been flying on board the "Victorious" during the recent manœuvres, has now been transferred to the "Magnificent."

The "Dreadnought," having had various alterations made in her propellers and steering arrangemnts, left Portsmouth on the 9th inst. for Plymouth, Berehaven, and Aranci Bay, Sardinia. On the present occasion the "Dreadnought" is testing her third set of propeller blades varying in their breadth and length. Hence the necessity for carrying out an exhaustive series of trials, and should they prove satisfactory, it is understood that similar screws and steering arrangements will be fitted to the other ships of her class now under construction.

The second-class cruiser "Sappho" has been commissioned for service in the West Indies.

The Trials of the "Agamemnon."—Want of space has prevented our noticing the trials of the "Agamemnon" sooner. The "Agamemnon," which has been built by Messrs. Beardmore and Co., at Dalmuir, is a sister-ship to the "Lord Nelson," now being completed on the Tyne. Their armament consists of four 12-inch, ten 9·2-inch, and 24 smaller guns, as compared with the four 12-inch, four 9·2-inch, ten 6-inch, and 26 smaller guns carried by the "King Edward VII." class. The new ships are shorter than the "King Edward VII." class by 15 feet, and have eighteen inches more beam, while the displacement is 16,500 tons, as compared with 16,350 tons. The length of the "Agamemnon" is 410 feet, with a beam of 79 feet 6 inches, and a displacement tonnage at 27 feet draught of 16,500 tons. This includes 900 tons of coal. The machinery of the "Agamemnon" has been constructed by Messrs. Hawthorn, Leslie, and Co., of Newcastle-on-Tyne, the legend power being 16,750-I.H.P. The series of trials began on Monday, 19th August, when a preliminary run was made down the Firth. It was a happy idea to visit the Channel Squadron, which at the time was lying in Lamlash Bay, and the new vessel steamed at a brisk pace through the lines in this anchorage, and incidentally proved that she was exceptionally quick at steering. Indeed, her manœuvring as well as her general appearance were a source of admiration to the officers of the fleet. A notable point was her high freeboard, which gives the battery of 12-inch and 9·2-inch guns a great advantage. The first real trial began on

Home. the following day, and was of 30 hours' duration, and at one-fifth of the total power, to correspond with what is regarded as the normal cruising speed of the fleet. Four runs were made over the measured mile, and the mean of mean speeds was found to be 11·79 knots, with the engines making 77 revolutions, and developing 3,447-I.H.P. The vessel continued to the westward, steaming out to the west of the island of Islay, and at the end of the 30 hours' trial it was found that the mean results were as follows:—With the engines making 77 revolutions per minute, and developing 3,494-I.H.P., with a vacuum of 26·5 inches, the coal consumption was 2·09 lbs. per I.H.P. per hour. The vessel anchored on the Wednesday night, and next completed her 30 hours' trial at 70 per cent. of the full power. Here, again, four runs were made over the measured mile, and it was found that the mean of mean speeds was 17·037 knots, which is very satisfactory. The engines made 117 revolutions per minute, developing 12,231-I.H.P. during these runs. The ship continued on her 30 hours' steaming 100 miles west of Rosslin Light, and at the close it was found that the average results were as follows:—With the engines making 115·9 revolutions per minute, and developing 12,034-I.H.P., with a vacuum of 27·15 inches, the coal consumption was 1·9 lbs. per I.H.P. per hour. On the full-power trial the "Agamemnon" exceeded the designed speed by three-quarters of a mile per hour, the power developed being 535-H.P. in excess of the requirements of the contract. The mean speed of four runs over the measured mile at Skelmorlie was 18·752 knots, and the average for the eight hours was 18·8 knots, as compared with 18 knots aimed at with 16,750-I.H.P. The mean power on the eight hours' run was 17,285-I.H.P., the revolutions 130 per minute, and the coal consumption 2·12 lbs. per I.H.P. per hour. The "Agamemnon" has reciprocating engines, and water-tube boilers by Messrs. Hawthorn, Leslie, and Co. (Limited), Newcastle-on-Tyne. The official reports of the trial note that the vessel was "very steady; no vibration."—*Times, and other sources.*

France. The following are the principal appointments which have been made:—Vice-Admirals—C. P. Touchard, P. Germinet, to be Members of the Superior Council of the Navy. Capitaines de Vaisseau—H. A. Calloch de Kérilis to "Charlemagne"; I. M. Mallet to "Justice"; F. Z. M. Jan-Kerguistel to "Liberté"; M. I. Lacaze to be Chief of the Staff to Vice-Admiral Germinet; A. Lefèvre to "Saint Louis"; F. I. De Bon to "Masséna"; L. G. Drouet to "Redoutable." Capitaines de Frégate—I. L. Jeanselme to "Claymore," and command of destroyer flotilla of Mediterranean Fleet; R. A. L. Pumpernéel to "Durandal," and Second Destroyer and Submarine Flotilla in the Channel; R. P. Chevalier to "Phlégéton."—*Journal Officiel de la République Française.*

General.—Vice-Admiral Germinet hoisted his flag on the 31st ult. on board the new first-class battle-ship "Patrie" at Toulon, in succession to Vice-Admiral Touchard. Vice-Admiral Germinet's flag should have been hoisted on the 1st of October, but he has been detained in Paris in consultation at the Ministry of Marine with the other members of the Superior Council of the Navy as to the new type of battle-ships, which are to form the new building programme, and to be laid down as soon as the six ships of the "Danton" class are launched,

France.

which will be in 1909. During Admiral Germinet's absence in Paris, Rear-Admiral Krantz, who commands the Cruiser Division, has been temporarily in command of the Mediterranean Fleet.

The admirals in command of the Mediterranean and Northern Squadrons will, in future, *ex officio* form part of the Conseil Supérieur de la Marine.

The Superior Council of the Navy and the New Building Programme.—This Council has been sitting in Paris, having been summoned by M. Thompson, the Minister of Marine, to consider several important questions connected with the fleet, chief of which has been that of the new battle-ship programme, which ought to be commenced in 1909. Five proposals were submitted to the Council, and carefully examined; while differing in details there was a common agreement as to the necessity of raising the displacement of the new ships to 20,000 or 21,000 tons, with the view of increasing the thickness of the armour, and attaining a speed of 20 knots with turbine engines; but there was some divergence of opinion as to the armament to be carried. Four of the five proposals were in favour of a one-type of gun armament, one only advocating a mixed armament as in the "Danton" class, as follows:—

1. Twelve 12-inch guns.
2. Fourteen 12-inch guns.
3. Sixteen 10·8-inch guns.
4. Twenty 9·4-inch guns.
5. Eight 12-inch guns and eight 9·4-inch.

The third solution was the subject of the longest discussion, because the 10·8-inch gun, which is in every way equal to the German 11-inch gun, is perfectly effective up to a range of 7,000 yards, which is considered to be the extreme limits at which a battle would be fought. At that distance the 10·8-inch gun will pierce 12·9 inches of steel, under an angle of incidence of 20°; its perforating power is thus sufficient against all existing armour, while the amount of ammunition which can be carried for this weapon is far in excess of that possible for the 12-inch gun, which will allow of a far more intense fire being maintained, a fact which contributed no little to the success of the Japanese at the battle of Tsushima. It is generally believed, however, that the majority of the members of the Council are in favour of a mixed armament of 12-inch and 10·8-inch guns, but in what proportion has not yet been settled.

New Submarines.—The Ministry of Marine has now placed the orders for the construction of the ten new submarines, provided for in this year's Budget. Two, "Q 90" and "Q 91," are to be built at Cherbourg; three, "Q 92," "Q 93," and "Q 94," are to be built at Rochefort; while five, "Q 95" to "Q 99," will be built at Toulon. The question as to the supply of compressed air to these boats is being considered by a special committee. All these vessels are to be of the "Pluviôse" type, 180 feet long, with a displacement of 425 tons. The names of the new submersibles are to be: "Pluviôse," "Ventôse," "Germinal," "Floréal," "Prairial," "Messidor," "Thermidor," "Muctidor," "Vendémaire," "Brumaire," "Primaire," and "Nivôse," being the names of the months in the Revolutionary Calendar. Two new submersibles, the "Circé" and "Calypso," were launched last month at Toulon; they are vessels with a displacement on the surface of 351 tons, and 480 tons when submerged, and a speed of 11·5 knots.

Mine-Laying Ships.—In view of the important part that submarine mines are likely to play in any future naval war, the Minister of Marine

France. has given orders that the first-class protected cruiser "Chateaurenault," built originally as a "Commerce-Destroyer," a vessel of no fighting value, but of high speed, is to be converted at Cherbourg into a mine laying ship, with all the necessary installations. The "Chateaurenault" is a ship of 8,000 tons displacement, with a speed of 23 knots, and a coal capacity of 2,100 tons, which gives her a radius of action at 12 knots of 10,000 miles. The second-class cruiser "D'Assas," a vessel of 4,000 tons displacement, with a speed of 19 knots, has been sent from Lorient to the Chantiers de la Loire, also to be converted into a mine-layer.

Steam Trial.—The new first-class battle-ship "Liberté," which has been built at the "Chantiers de la Loire" at St. Nazaire, has successfully completed her trials off Brest. On the 14th of September, she ran a three hours' full-speed trial, during which the engines developed 20,565 I.H.P., being 2,565-H.P. over the contract, the mean speed maintained being 19·31 knots, the contract speed being 18. It is noteworthy of remark that all the battle-ships of this class have reached a speed of a knot higher than they were designed for.

On the 18th-19th of September, the ship made her twenty-four hours' coal consumption trial, under natural draught, during which the engines developed 11,624-I.H.P., or 1,124-H.P. in excess of the contract, the coal consumption per indicated horse-power per hour being 654 gr. (1·43 lbs.).

The third coal-consumption trial was made with the two side screws only working, the engines to develop about 2,200-I.H.P., with a coal consumption not exceeding 700 gr. (1·50 lbs); this trial was also successful, the coal consumption per indicated horse-power per hour being only 644 gr. (1·37 lbs). The "Liberté's" boilers are of the Belleville type, which have always in the French Navy given excellent results.

Launch.—The armoured cruiser "Edgar Quinet" was launched at Brest on 21st September, in the presence of Vice-Admiral Péphau and the naval authorities; in view of the revolutionary and socialistic feeling among the workmen, extraordinary precautions had to be taken to ensure the safety of the ship for the last few days before the launch, and a company of soldiers under arms was on guard each night. At the time of the launch, when the "Marseillaise" was played by the band, a party of workmen struck up the "Internationale" song, and there was much whistling and boohing on the arrival of the Admiral.

The "Edgar Quinet" was commenced in August, 1904, but her original plans have been altered to make her similar to the "Waldeck Rousseau," and the two ships are now identical in every respect.

Her dimensions are: — Displacement, 14,000 tons; length, 157-m. (518 feet); beam, 21·50-m. (74 feet); draught, 8·23-m. (27 feet). She has three engines, driving three propellers, with a collective 30,000-H.P., to give an estimated speed of 25 knots. Her normal coal capacity is 1,242 tons, giving a radius of action at 10 knots of 6,000 miles; but an extra 1,058 tons can be carried, and with this total of 2,300 tons she has a radius of action of 11,000 miles.

Her armament comprises fourteen 194-mm. (7·6-inch) guns, sixteen 65-mm. (2·5-inch) Q.F. guns, eight 47-mm. (1·8-inch) guns, and two 37-mm. (1·4-inch). She is also fitted with two below-water torpedo discharges.

Her armoured protection is given by a belt 150-mm. (5·9 inches) thick amidships, and her complement is fixed at 30 officers and 708 men. Her total cost is 32,688,412 francs (£1,307,536 10s.).

France.

Loss of Torpedo-boat No. 234. — The first-class torpedo-boat No. 234, forming one of the training division of the First Mediterranean Torpedo Flotilla, when returning from Saint Tropez and off Cape Bénat, in the vicinity of the Hyères Islands, struck on a rock in the rough sea that was vicinity of the Hyères Islands, struck on a rock in the rough sea that was 7 fathoms of water near Point Pinet, about thirty-three miles from Toulon. No lives were lost. The boat has since been raised and towed into the roadstead of Salins d'Hyères, and will be brought to Toulon as soon as weather permits; but it appears doubtful if it will be found worth while to repair her.

Motor Torpedo-Boat. — Much interest is being shown in a small motor torpedo-boat displacing eight tons only, which has been built for the French Navy for experimental purposes. This little craft has been constructed at the Petit Quevilly, near Rouen, and ascended the Seine at a speed of 14 knots. Her upper works are of steel, and include water-tight compartments for safety. The whole boat is constructed of thin steel, and has a motor of the Cazes type, developing 170 H.P. with 900 revolutions, and 150-H.P. with 800 revolutions. The motor drives a reversible screw as well as the auxiliary machinery. The boat attained a speed at her trials of 16·3 knots. She has a torpedo tube in the bow, and it is said that she can be navigated and worked by two men. She is 52 feet 5 inches long, 8 feet 9 inches beam, and 3 feet extreme draught.—*Le Temps*, *Le Yacht* and *La Vie Maritime*.

Germany.

The following are the principal promotions and appointments which have been made: Vice-Admirals—Fischel to be Admiral; Wodrig to be Director of Dockyards at Ministry of Marine; Schmidt to be Director of the General Navy Department at the Ministry of Marine. Rear-Admirals — Goetz, von Müller, Trüppel, Zeye to be Vice-Admirals; Schröder to Command of Second Squadron of the High Sea Fleet; Pohl to be Inspector of Naval Artillery; von Heeringen to Command of Cruiser Division; Rollmann to be Director of Naval Construction at the Ministry of Marine. Kapitäns zur See—Kalau von Hofe, Ingenohl, Rollmann, Dezewski, Einsmann to be Rear-Admirals; Jacobsen to be Commodore, to Command Second Division of First Squadron; Freiherr von Schimmelmann to be Superintendent of Danzig Dockyard; Scheer to "Elsass"; Eckermann to "Braunschweig"; Souchon to "Wettin"; Stahmer to "Zähringen"; Gädeke to "Kaiser Karl der Grosse"; Schutz to "Preussen."—*Marine-verordnungsblatt*.

The High Sea Fleet.—The following changes in the composition of the High Sea Fleet were to take effect as from the 1st of October:—The new first-class battle-ships "Pommern" and "Hannover," on conclusion of their trials, replace the "Kurfürst Friedrich Wilhelm" and "Brandenburg" respectively. These two last-named ships are two of the oldest in the Navy at present on active service, while the "Kaiser Barbarossa" has been substituted for the "Kaiser Friedrich III."

The new first-class armoured cruiser "Scharnhorst," having completed her trials, is to join the cruiser division of the fleet, the "Gneisenau," her sister-ship, replacing the "Friedrich Karl," an older ship, as flagship of the Second-in-Command of the division; while the new small cruiser "Königsberg" takes the place of the "Medusa."

Germany.

Steam Trials.—The new first-class battle-ship "Pommern" made on the 13th November on the Newkrug course her six hours' full-speed trials, the engines making 118 revolutions (mean) and developing 18,697-I.H.P., giving a mean speed of 19 knots; the mean air-pressure was 23-mm. (·88 inches), and the coal consumption 729 gr. (1·62 lbs.) per I.H.P. per hour. On the 14th September, with the engines developing 20,348-I.H.P. —or more than 4,000-H.P. in excess of contract—and making 122·28 revolutions, a speed of 19·2 knots—or more than a knot over the contract—was reached. On the 17th September she made a 24 hours' coal-consumption trial, using the two side screws only, the engines developing 3,464-I.H.P., giving a speed of 10·8 knots, with a coal consumption of 723 gr. (1·56 lbs.) per I.H.P. per hour. On the 19th September another three hours' trial was made to compare the results, when, using coal alone, and then mixed fuel (coal and oil); with coal alone, the engines making 78·7 revolutions and developing 4,298-I.H.P., the coal consumption was 747 gr. (1·66 lbs.) per I.H.P. per hour, with a mean air pressure of 19·3-mm. (·73 inches); with mixed fuel—the four after boilers are fitted for oil fuel—the engines developed 4,757-I.H.P., making 77·3 revolutions, with a consumption of 371 gr. (·81 lbs.) of coal, and 296 gr. (·67 lbs.) of oil.

The new first-class armoured cruiser "Scharnhorst," on a run between Heligoland and the light-ship "Elbe I.," attained a speed of 24 knots, being 1·5 knots over what she was designed for.

The small cruiser "Königsberg" carried out in August a series of progressive trials with manganese screws; with the engines developing 1,237-I.H.P. and making 64·9 revolutions, she made 12·01 knots; with the engines developing 2,778-I.H.P. and making 86·5 revolutions, the speed was 15·78 knots; with 5,666-I.H.P. and 109·8 revolutions, the speed was 19·76; with 13,584-I.H.P. and 138·4 revolutions, a speed of 23·9 was attained.

The new small cruiser "Stettin," which is fitted with turbine engines, on a preliminary trial run between Bornholm and Christiansö, with the engines developing 21,400-I.H.P., made 25·7 knots; the vessel, however, was not down to her full load draught. On the 29th September, on her sea draught, with the engines developing 19,900-I.H.P. and making 565 revolutions, her speed was 23·3 knots.

The small cruiser "Danzig," having had the pitch of her screws altered from 5·75 metres (18 feet) to 19 feet 6 inches, with the engines developing 12,670-I.H.P. and making 142·4 revolutions, attained a speed of 23·19 knots.

Launches.—On the 5th ult. the third-class cruiser Ersatz "Comet" was launched from the yard of Blohm and Vors, and received the name of "Dresden." Her dimensions are as follows:—Length, 387 feet 2 inches; beam, 44 feet 3 inches; draught, 15 feet 9 inches on a displacement of 3,800 tons. The engines are to develop 13,700-I.H.P., to give a speed of 24·5 knots, and will be on the Parsons turbine system, and there will be stowage for 800 tons of coal, the normal supply being 400 tons. The armament will consist of ten 4·1-inch Q.F. guns (40 calibres) and eight 55-calibre 2-inch Q.F. guns.

On the 1st ult. was launched from the Howaldt Works in Kiel the dock-ship "Vulcan," for use with submarines, which is to act as a combined salvage-ship and dock, the German Admiralty wishing to guard against such catastrophes as have occurred on more than one occasion to submarines, both in the English and German Navies. The new vessel, which is 227 feet long, is really made up of two single hulls, which can be

Germany. separated or joined together, and fitted with appliances so that it can be used for both raising and docking a submarine which has come to grief. Above the middle of the two parts of the ship is a powerful crane, with a lifting capacity of 500 tons, which will hoist the submarine out of the water, and place her on supports, where she can be repaired; the crane will be worked by electric power; the ship's primary engines being worked by steam, which will provide the necessary electrical energy for working the crane, and also supplying the submarines, while giving the ship a speed of 12 knots.

New Armoured Cruiser.—The contract for the construction of the new first-class armoured cruiser "F," one of the ships of this year's programme, has been secured by the firm of Blohm and Voss. She is to cost £1,800,000, will be fitted with turbine engines, and to have, it is reported, a displacement of 17,000 tons, as she is intended to be a reply to the cruisers of the "Invincible" class. The German Admiralty are gradually being converted to turbine engines, and are fitting their new small cruisers with them, as well as destroyers.

A Submarine Record.—The new submarine "UI" recently made the voyage from Heligoland round Skagen to Kiel, a distance of 600 miles, under her own power. The vessel is propelled by two petrol motor engines, each of 225-H.P. The passage was made in rough weather and with the original supply of fuel. The longest distance covered by a French submarine under similar conditions is given as 300 miles.

New Destroyers.—The half-flotilla of destroyers which are being constructed at the Krupp Germania Yard, Kiel, "G 132"—"G 137," will be vessels with a displacement of 487 tons, to have a speed of 30 knots, with the exception of No. 137, which has a displacement of 572 tons and is fitted with turbine engines (Parsons system). "G 137" has already begun her speed trials at Eckernförde Bay, when she attained a speed of 33·9 knots on her three hours' forced draught trial, as against the 30 knots called for in her contract.

Two other flotillas of twelve boats each, which are also under construction, "S 138"—"S 149" and "V 150"—"V 161," are to have a displacement of 525 tons, and a speed of 30 knots.

—*Marine Rundschau* and *Neue Preussiche Kreuz Zeitung.*

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battle-ships.			
Pommern	13,200	Stettin.	Under trial.
Hannover	13,200	Dantzig. (Schichau Works).	„ „
Schleswig-Holstein...	13,200	Kiel.	Launched Dec. 17, 1906.
Schlesien	13,200	Dantzig.	„ May 28, 1906.
Ersatz Bayern	19,000	Wilhelmshaven.	Building.
„ Sachsen.....	19,000	Bremen.	„
„ Wurtemberg	19,000	Stettin. (Vulcan Works).	„
„ Baden.....	19,000	Kiel. (Germania Works).	„

Germany.

Armoured Cruisers.

Gneisenau	11,600	Bremen.	Launched June 14, 1906.
Scharnhorst	11,600	Hamburg.	Under trial.
E	15,000	Kiel.	Building.
F	18,000?	Bremen.	„

Protected Cruisers.

Stuttgart	3,420	Dantzig.	Launched Sept. 22, 1906.
Stettin	3,420	Stettin.	„ March 7, 1907.
Nurnberg	3,420	Kiel.	„ Aug. 28, 1906.
Ersatz Pfeil	3,500	Dantzig.	Building.
„ Komet	3,500	Hamburg.	„
„ Greif	3,500?	——	Authorized.
„ Jagd	3,500?	——	„

Cost of the Fleet.—The cost of the Fleet in Commission is distributed as follows :—

1. *The Battle Fleet.*

	1907.			1906.	
	Marks.	£	s.	£	s.
Active Squadron	9,655,497	= (482,774	17)	466.245	16
Reserve	976,194	(48,809	14)	34,742	10
Scouting Division	4,132,838	(206,641	18)	170,425	0
Torpedo Flotillas	3,461,445	(173,072	5)	141,151	10
Total	18,225,974	(911,298	14)	812,564	16

Showing an increase of 1,967,480 marks (£98,374), as compared with last year.

2. *Ships on Foreign Stations.*

The China Station	3,571,302	(178,565	2)	238,884	0
The Australian Station	538,344	(26,917	4)	25,021	4
The West African „	219,696	(10,984	16)	12,076	16
The East African „	275,484	(13,774	4)	12,826	4
The American „	1,012,788	(50,639	8)	48,115	16
Constantinople Stationaire	32,452	(4,122	12)	4,326	12
Surveying Duties	151,440	(7,572	0)	11,283	0
Total	5,851,506	(292,575	6)	352,533	12

Showing a decrease of 1,199,172 marks (£59,958 12s), as compared with last year.

3. *Training Ships.*

Cadets' and Boys' Training Ships	1,832,700	(91,635	0)	54,009	0
Gunnery School Ships	1,587,780	(79,389	0)	107,950	14
Torpedo School Ships	1,084,635	(54,231	15)	46,615	8
Submarine Mining	573,712	(28,685	12)	8,334	5
Coast Pilotage	53,380	(2,669	0)	2,539	13
Total	5,132,207	(256,610	7)	219,449	0

Showing an increase of 743,227 marks (£37,161 7s.), as compared with last year.

Germany.

4. Special Service Ships.

Imperial Yacht "Hohenzollern"	378,264	(18,913 4)	18,265 4
Surveying Ships (Home Waters)	41,640	(2,082 0)	1,837 10
Artillery Experiments	611,580	(30,579 0)	—
Torpedo Experimental Ship	775,188	(38,759 8)	36,634 4
General Experiments	225,024	(11,251 4)	9,086 8
Fishery Protection	151,777	(7,588 17)	6,140 0
Total	2,183,473	(109,173 13	71,963 6

Showing an increase of 744,207 marks (£37,210 7s.), as compared with last year.

5. For Special Purposes	755,946	(37,797 6)	43,768 18

COMBINED TOTAL.

Battle Fleet	18,225,974	(911,298 14)	812,924 14
Foreign Service	5,851,506	(292,575 6)	352,533 18
Training Ships	5,132,207	(256,610 7)	219,449 0
Special Service Ships	2,183,473	(109,173 13)	71,963 6
Special Purposes	755,946	(37,797 6)	43,768 18
Total	32,149,106	(1,607,455 6)	1,500,639 16

Showing an increase of 2,136,310 marks (£106,815 10s.), as compared with last year.

Etat für die Verwaltung der Kaiserlichen Marine, 1907.

United States.

New Training-Ship in Commission.—The U.S.S. "Cumberland" has just been placed in commission at the U.S. Naval Training Station, Newport, R.I. The new steel vessel is a sailing-ship carrying six 4-inch rapid-fire guns in her main battery, and is named after the famous old "Cumberland" that was sunk by the "Merrimac" in the Elizabeth River in 1862, with her colours flying. The new "Cumberland" is to be used for the training of apprentice seamen.

Present and Prospective Docking Facilities of the Pacific Coast.—Now that the main strength of the United States Navy may be transferred, temporarily at least, to the Pacific, it becomes interesting to know what the docking facilities are on that coast. Outside of possible accidents, the cruisers and battle-ships will have to be docked at stated intervals in order to have their hulls cleaned and repainted. As a matter of strict economy, it is said that a steel bottom ought to be cleaned and repainted at least one a year. Now on the entire Pacific coast the United States Government has just two dry docks—one at Mare Island in San Francisco Bay, and another at Bremerton, Wash., on Puget Sound. Both of these are graving docks. The drydock at Mare Island is of granite, 513 feet long over all, with a width of 80 feet 7 inches at the entrance, and a depth of 27 feet 6 inches over sill. The drydock at Bremerton has a wood body and masonry entrance. Its length over all is 650 feet, width of entrance 92 feet 8 inches, and depth over sill 30 feet.

The inevitable naval base under the new order will, of course, be at San Francisco; and the docking facilities of that port consequently become

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a subject of more than ordinary importance. As may be readily seen, the drydock at Mare Island will be inadequate to the needs of the occasion. To be sure, a second graving drydock at Mare Island has been under process of construction for the past six years; but from various causes much delay has been occasioned, and it is stated upon good authority that it would take two or three years to finish the work, even though it were to be hastened with all possible speed. This new dock when finished will be 720 feet long, 102 feet wide, and 30 feet deep. The chief difficulty thus far encountered is in securing a substantial foundation. The formation composing its site is hardly more than a deep bed of mud; and in order to secure a foundation that will hold up the structure when finished, it is found necessary to drive a dense mass of wooden piling. Upon this foundation it is proposed to build the dock of reinforced concrete.

Fortunately, however, the Government need not depend upon itself for docking facilities in San Francisco Bay. At Hunter's Point on the west shore of the Bay, five miles south of the city of San Francisco, the San Francisco Dry Dock Company operates a very extensive plant, and has already done considerable docking for the Government, notably that of the "Oregon," in 1894, and of the "New York" in 1903. Recently the chief engineer of the company has completed plans for the largest drydock in the world, to be soon constructed by the company at Hunter's Point. The company's present plant consists of two graving docks and two floating docks. The first graving dock was completed in 1868. It is 490 feet long over all, 97 feet wide at the gate top, and 56 feet wide at the gate sill; midships it is 117 feet wide at the top and 58 feet wide at the bottom. This dock has wooden altars and wooden caisson. The second graving dock was completed in 1903, and in it the "Ohio" was docked in February of that year. This dock is 750 feet long over all; width at gate top, 103¼ feet; at gate bottom, 86 feet; midships at top, 122 feet wide and 74 feet at bottom. This dock has concrete altars and a steel caisson; it is filled through the caisson, while the old dock is filled through a seven-foot tunnel.

The largest drydock in the world to-day is at Belfast, Ireland; San Francisco will shortly possess a dock of even greater dimensions. The new drydock above referred to will be 1,050 feet long from gate to the landward extremity; width at coping, 144 feet, and at bottom, 92 feet; depth over sill and below coping, 39 feet 10 inches, or 34 feet 6 inches at high water. The interior facing of the dock will be of reinforced concrete of an average thickness of 15 inches; and the altars will be of the same material. The stairways and timber slides will be formed in the main body of the dock, and will be flush with the surface of the same. Such portions of the slides of the dock as will be above the rock formation underlying the site will be reinforced concrete, and will be proportional in thickness to the height of the same, and anchored into the rock with structural steel posts. The gate sea proper will be of dimension granite, but the approach and buttresses will be of reinforced concrete. The keelsons are to be of Douglas fir and the flooring of Port Orford cedar, all anchored and embedded in a sub-floor of cement. The drainage of the dock will be by surface gutters connected with a sump. The caisson or gate will be of steel construction, and will be virtually a vessel 147 feet long at the deck, 128 feet long on the keel, with a beam of 26 feet and a depth from deck to bottom of 41 feet.

The pumping plant for the new dock will consist of four 54-inch centrifugal double suction pumps with a joint capacity of 200,000 gallons

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of water per minute. Each pump will be driven by a 500-H.P. three-phase electric motor, using 440 volts. These will be located at the bottom of the pump pit, and will be so arranged as to be started from the gallery at floor level, it being the intention to use the high-tension current of one of the public service power companies, say at 1,000 volts, and transform the same to the requisite voltage.

The dock will hold 24,000,000 gallons of water, but with the pumping plant described, may be pumped out within the space of two hours. The earth conditions at Hunter's Point are very favourable for the construction of graving drydocks, the site of the present docks and of the proposed dock being underlaid with what is known as green serpentine rock, forming a very solid foundation, as well as substantial backing for the sides.

The new dock was neither conceived nor planned in anticipation of any possible massing of the United States Navy, but in anticipation of the constantly increasing size of ocean craft and the growing importance of the Pacific Ocean as a maritime field of operation.—*Scientific American.*

VESSELS BUILDING.

No.	Name.	Speed. Knots.	Where Building	Per Cent. of Completion Sept. 1, 1907.
	Battleships.			
23	Mississippi	17	Wm. Cramp & Sons.	92·0
24	Idaho	17	Wm. Cramp & Sons.	86·0
25	New Hampshire	18	New York Shipbl'g Co.	83·0
26	South Carolina	18·5	Wm. Cramp & Sons.	21·7
27	Michigan	18·5	New York Shipbl'g Co.	24·0
28	Delaware	21	Newport News.	0·0
29	North Dakota	21	Fore River.	0·0
	Armoured Cruisers.			
9	South Dakota	22	Union Iron Works.	98·9
12	North Carolina	22	Newport News.	89·0
13	Montana	22	Newport News.	82·6
	Scout Cruisers.			
	Chester		Bath Iron Works.	88·7
	Birmingham		Fore River Shipb'g Co.	87·8
	Salem		Fore River Shipb'g Co.	86·6

MILITARY NOTES.

Home. The following are the principal appointments which have been made :—

Lieut.-General.—Sir I. S. M. Hamilton, K.C.B., D.S.O., Commanding-in-Chief, Southern Command, to be General.

Major-Generals.—F. W. Benson, C.B., from Director of Transports and Remounts at Headquarters, to be a Major-General in Charge of Administration. C. E. Heath, C.V.O., from Brigadier-General in Charge of Administration, Aldershot Command, to be Director of Transports and Remounts at Headquarters. H. M. Lawson, C.B., to be a Major-General in Charge of Administration. W. H. Mackinnon, C.V.O., C.B., Director of Auxiliary Forces at Headquarters, to be Lieutenant-General.

Colonels.—The undermentioned officers are granted the temporary rank of Brigadier-General, whilst holding appointments of Chief Engineers : P. T. Buston, C.B., D.S.O., N. M. Lake, C. V. Wingfield-Stratford, and W. F. H. Stafford, C.B. G. C. Kitson, C.V.O., C.M.G., a Brigade Commander in India, to be a Major-General. Sir C. Fergusson, Bart., M.V.O., D.S.O., to be a Brigadier-General. J. Adye, C.B., from General Staff Officer, 1st Grade, Malta, to be a General Staff Officer, 1st Grade, Headquarters. T. G. L. H. Armstrong, from h.p., to be a Colonel in Charge of Records. G. V. Kemball, C.B., D.S.O., from an A.G.M.G., to be an Assistant-Director at Headquarters. E. T. D. Cotton-Jodrell, C.B., 2nd (Railway) Cheshire Royal Engineers (Volunteers), from Assistant-Director for Volunteer Services at Headquarters, to be an Assistant-Director at Headquarters. C. W. Park, C.B., a Brigade Commander in India, to be Major-General. B. Burton, C.B., from a Staff Officer for Horse and Field Artillery, to be a Brigadier-General to Command the Artillery of a Division. F. Smith, C.B., C.M.G., Army Veterinary Service, to be Director-General, Army Veterinary Service, and is granted the hon. rank of Major-General. W. P. Campbell, C.B., Commanding 3rd Infantry Brigade, to be Major-General.

New South Wales. *United Service Institution.—The Journal and Proceedings of the United Service Institution of New South Wales* for 1906 publishes the names of the winners of the Gold Medal Prize Essay for that year :—1st Prize Essay—Bt.-Major F. A. Dove, D.S.O., Instructional Staff (Cadets), C.M.F. of New South Wales.

2nd Prize Essay—2nd-Lieutenant K. F. Meiklejohn, 1st Battalion Queen's Own Cameron Highlanders.

3rd Prize Essay—Major C. F. Winter, The Governor-General's Foot Guards (Canada).

The following was the subject of the Gold Medal Prize Essay :

"The Attack and Defence of Localities in a Wooded Country of the Character usually found in New South Wales."

Austria-Hungary.

The Imperial Grand Manœuvres of 1907.—These manœuvres made great demands on both officers and men. The three days of almost uninterrupted fighting in difficult country entailed privations in the carrying out of both marches and the fighting as well as hardships as regards shelter and rations, such as were hardly inferior to those met with in actual war, and in many respects, owing to the absence of requisitions, surpassed them. The troops, however, carried out all the demands made on them, both willingly and well. The percentage of sick, about ·6 to 1 per cent., was extraordinarily small. It should at the same time be taken into consideration that the exertions of the preceding corps, division and brigade manœuvres, with their long marches, may have sifted the chaff from the wheat. On the other hand the manœuvres afforded the widest scope for the display of initiative to both officers and non-commissioned officers and men. In spite of all difficulties and hardships beaten troops showed keenness to return to the attack, not only on the next, but on the same day, and frequently reversed the result of the action. The mobile field kitchens prove of the greatest use in these manœuvres.

Infantry.—The infantry had to accomplish long marches, the difficult nature of the country made heavy demands on their manœuvring capacity and dexterity. They easily surmounted all these difficulties. To be sure they were composed, with the exception of a West Galician Jaeger battalion and a Mid-Bohemian Infantry Regiment, entirely of mountaineers, for the most part sons of the Alps, of the Carpathians, and of the Bosnian Hills. The infantry showed great skill in taking every advantage of cover afforded by the ground. Compact objectives for artillery fire at long ranges were very seldom offered. Whilst skirmishing amongst the rocks and the grasslands the pike-grey uniforms of the Jaeger and Alpine troops were of the greatest possible advantage, and compared most favourably with the usual Austrian uniform. (Infantry—dark-blue with light-blue trousers; Bosnian infantry, light-blue.)

Cavalry.—The cavalry had to contend with great difficulties in reconnoitring in this mountainous country. On account of their limited numbers (altogether 15¾ squadrons), naturally only small detachments had an opportunity for taking part in the fight. Nevertheless, several well-made attacks by individual squadrons should be noted, whilst, especially in reconnaissance duty, the cavalry, when opportunity offered, successfully opposed infantry detachments in dismounted fire action.

Field-Artillery.—This arm, too, had great demands made on its manœuvring capacity, which were also successfully met with. On the march to the Grand Manœuvres individual batteries had to take their guns to pieces in order to transport them over difficult, narrow mountain-tracks. The batteries almost always advanced to their positions under cover, and knew well how to conceal and mask them. Indirect fire was sometimes resorted to without any cogent necessity. In this regard it must be borne in mind that the Austrian Field Artillery have no pointing apparatus to their present gun, and have no lengthening-rod either with the present or the new gun (M. 5).

Pioneers and Communication Troops.—With the exception of the use of the military telephone used by Chief Command, and the widespread network of telegraph, telephone and optical signalling of both sides, these troops were afforded small opportunity for the display of their efficiency.—*Précis* from *Militär-Wochenblatt.*

France.

The Grand Manœuvres of 1907.—The discipline of the French Army is not equal in all portions of it, but it may, on the whole, be pronounced good. Especially noticeable in this respect are the cool, thoughtful men of units recruited in Northern France; less good are the men coming from the South of France, and the Marine, Infantry and Artillery, African Light Infantry and foreign regiments, whose men are recruited from the large population centres, from seaport towns, from the refuse of other units, and from foreigners who are not of French nationality.

Officers.—As regards the corps of officers, there can be no doubt that, on the whole, a favourable judgment must be pronounced, even if everything is not quite as it should be. As regards the "sortis du rang." or rankers, the greatest care seems to have been taken recently as to their disposal, and only thoroughly unobjectionable men are selected. The chasm is, however, still very distinct which separates the highly educated "écolier," or cadet, from the former "sousoff," who can only, by the greatest pains, endeavour to fill in the gaps so noticeable in his education. It is not, however, in the duality of origin of the French officer that the fault lies, but in the mixing of the "sortis du rang" with the "écoliers" together and in attempting to make one general corps of officers of the two. The centrifugal forces which are introduced into the French Army from the dual origin of the officers, make themselves felt in more ways than one, and especially through the fact that the general officers, the War Department, and especially the General Staff, are taken almost entirely from officers who were originally "écoliers."

Infantry.—If one doesn't take into consideration the number of sick, from causes attributable to marching, the infantry made a good impression. Machine-guns during these manœuvres were not seen with infantry units.

Cavalry.—The French cavalry, in spite of the fact that they were too heavily clothed and equipped, always created a first-rate impression. Individual cavalrymen were attached to infantry battalions as mounted scouts. These, however, seem to have misunderstood their object and their duties. Mounted scouts are, as their very name signifies, meant for scouting work, in addition they must maintain suitable lateral communication between columns. They thus serve chiefly the purposes that bicycles and motors do in other armies, and as they have hitherto done in the French Army. These purposes the mounted scouts appear to have failed to realise. These failures, however, according to the French journals, occurred frequently, and, in addition, complaints were made that one often didn't know what should be done with them in the fight itself. In short, the mounted scouts do not appear to have proved their value, and they will hardly again be seen at manœuvres. When one considers the proportion of strength of the cavalry, it is quite incomprehensible how such an experiment could ever have been made.

General complaints, too, were made as regards the method and manner in which the infantry and cavalry were mixed up on the march.

Artillery.—Critical observations with regard to the march-discipline, the state, and also as regards the battle-discipline of the artillery, can naturally not be so easily made as of the sister services. It may, however, be stated that the taking up of positions was, as a rule, carried out with extraordinary care, calmness, and often with a great expenditure of time.

On the whole, one can well say that to the most scientific mechanism, which is displayed by every modern army, in France the very smallest

France. detail is provided for and supervised. These details, however, are not composed of equally good material, and are, therefore, not of equal value.

The African Light Infantry Battalions.—In the Military Notes of the JOURNAL for July last, page 898, an account was given of the French disciplinary companies. That account cannot be considered complete without the addition of a description of the French African Light Infantry Battalions.

Article 5 of the Law of the 21st March, 1905, lays down the attachment to probationary corps of all young men who, either prior to or after their enlistment, have undergone a punishment of at least 6 months' imprisonment, or of 2 or more punishments extending over a period of 6 months' imprisonment for public outrages, against decency, theft, swindling, violation of confidence, etc. Such is the sole source for the recruiting of the African Light Infantry Battalions.

The number of these battalions is 5, and each consists of 6 companies, whose organisation is identical with that of the foot Chasseurs. Each of these battalions has, in addition, a disciplinary section for the reception of irreclaimably bad characters, with whom all other methods have failed. The system of these sections is similar to that of the disciplinary companies, details of which were given in the JOURNAL for July last.

These battalions are quartered as follows :—

1st Battalion at El Kreider, with detachments in the high plateaux and in the South.

2nd Battalion at Laghouat, with detachments in the high plateaux and in the South.

3rd Battalion at El Kef, with detachments in the Kru Country.

4th Battalion at Camp Servière (Tunis).

5th Battalion at Gabès, with detachment in Southern Tunis and the Tripolitan frontier.

The Cadres.

Officers.—All orders and regulations which have appeared since the raising of the African Battalions have reproduced the following :—

"Infantry officers noted for service in the African Light Infantry Battalions must be very well reported on as regards conduct and zeal." The regulations of the 12th November, 1902 recommended in addition that only officers should be selected for these corps who have applied for them. As a result the African Light Infantry Battalions are commanded and commissioned by excellent officers.

Non-Commissioned Officers.—These come from corporals of the corps or from non-commissioned officers of the Home Army. They are all re-engaged men, and are on the whole excellent. By judicious arrangement exchanges are allowed, and they are frequent. Life is rough in the Southern posts, and to this fact alone is due the desire of these non-commissioned officers to return to France after some years' service in those battalions.

Corporals are drawn either from corps in France or from the ranks of the battalion itself. A regulation of the 16th March, 1838, allows the selection of corporals from amongst the men, and men so selected enjoy a certain authority over their former comrades. The danger to be avoided is that they don't abuse the authority conferred by the rank. Reinstated corporals may be promoted non-commissioned officers. Such cases, are, however, rare.

France. The system of interior economy of the African Battalions is identical with that of corps or ordinary troops; the pay and allowances are the same as that of other troops quartered in Algeria, and the instruction is carried out in conformity with the regulations in force for infantry. The feeding is particularly well looked after, and is superior to that of many corps quartered in France.

The two first battalions of the African Light Infantry were raised by a Royal Order of the 13th June, 1832. By the terms of that order these battalions were recruited from soldiers who, condemned for misdemeanour, had still to complete their term of military service, laid down by regulation, after the expiration or pardon of their crimes. The African Battalions received as well the best men from the disciplinary companies who were still capable of being made into good soldiers; they could also receive voluntarily enlisted men. From the very commencement these troops have been remarkably well commanded, and their list of commanding officers includes a considerable proportion who rose to high distinction in the Service. Since their raising, too, these battalions have fought and distinguished themselves in every expedition where French soldiers have been employed, and have well sustained the honour of France at Mazagran, in Mexico, China, Cochin-China, and Tonkin.—*Précis* from *Militär-Wochenblatt* and *Armée et Marine.*

Germany. *The Imperial Grand Manœuvres of 1907.*—The manœuvres, directed by the Emperor, assisted by General von Moltke, Chief of the Grand General Staff, took place this year in Westphalia, in a triangle whose extreme points were Warbourg, Hoexter and Altenbecken. The direction of the manœuvres was installed at Hoexter, but the Emperor established his own residence at the Castle of Wilhelmshöhe, from whence he came every morning by special train. His movable hut was, nevertheless, prepared in case he wished to pass a night in the midst of his troops.

The general idea of the operations was as follows :—

Pursuit of a Red Army, beaten on the 5th and 6th September by a Blue Army between Dalmen and Lunen, to the south of Münster, and driven back towards the Forest of Teutobourg.

The Xth Army Corps represented the Red Army, and the VIIth Army Corps the Blue Army. Full details of the composition of both sides were given in the JOURNAL for June last, page 744.

As last year, full liberty of action was given to the commanders of both sides during the entire period of the regular operations. It is true that these only lasted for three days, and it seemed the more short as the two commanders were able to advance their reserves by rail. This experimental innovation in grand manœuvres of the employment of railways during the battle was excellent in itself, but it was of small interest under the conditions in which it was practised. On account of the short duration of the operations, the means of transport had, necessarily, to be provided in advance, and were, besides, only used for the 17th Division, which was at a reduced effective. But although an experience of such small extent cannot be regarded as conclusive, its trial, nevertheless, reflected great credit on the Grand General Staff. One can only make sure of the results in time of war of notions which have been tried during manœuvres in peace. Another innovation was that of a corps of motor-cyclists, composed of 140 men. The Volunteer Motor Corps carried out the same duties as last

Germany.

year, but its cars were reserved almost exclusively for the Staffs. Finally a company of 140 cyclists was formed in the VIIth Army Corps.

Criticisms.—The German military writer, Colonel Gädke, thus criticises the manœuvres :—

"Certain regiments," he writes, "had as many as 300 men crippled, and the field hospitals were choke-full and insufficient for the numbers of the sick. The cause of this was the exaggerated length of the marches which some regiments of the Xth Army Corps had to carry out; as much in some cases as 60 kilometres (about 34 miles) a day."

The cavalry, too, did not altogether satisfy the Emperor, who especially criticised the command of the cavalry division attached to the Xth Army Corps (the B Division). Colonel Gädke attributes the faults of the cavalry to its defective training. "Our fine regiments," he says, "are especially trained for grand, artificial, and purely spectacular attacks, and neglect too much other important duties incumbent on them. Nowadays it is no longer possible to launch masses of cavalry on an enemy across a zone of from five to six kilometres exposed to fire."

The Emperor also expressed himself against night attacks. As a matter of fact, the night attacks of the VIIth Army Corps gave rise to great confusion. Colonel Gädke, on the other hand, considers that is all the more reason to perfect the education of the troops in that regard and to give them more experience in this method of attack by constant night manœuvres. In conclusion, Colonel Gädke thus summarises his opinion of the Imperial manœuvres:—

"Strategy was conspicuous by its absence, and tactics from their venerable antiquity."

The special correspondent of *Armée et Marine* writes thus about the manœuvres:—

"I followed with attention the Cyclist Company formed from the VIIth Army Corps. This company, 140 strong, was only raised this year as a tentative measure. The men, taken from all regiments of the army corps, were not provided with folding machines, which greatly paralysed the manœuvring power of the company, compelling it to stick to the roads and prohibiting surprise attacks over country at all difficult. Although I was present at an unexpected attack on a squadron of hussars by two cyclists' sections, I received the impression that this new arm was still in a very embryonic stage in Germany. The infantry seemed to me to be well in hand in spite of a strong contingent of reservists. Always disciplined, there were, nevertheless, certain of those incidents which French papers magnify, and which German ones conceal. I myself perceived much disciplinary slackness amongst the special troops, especially the pioneers.

"The application of the new drill regulations commences to develop initiative in the subordinate cadres, and causes the German infantry to become more supple. But although its deployments are more rapidly carried out, its lines of skirmishers still remain too dense and very ponderous in movement. The weight carried by the infantry soldier appears to be a heavy one. Rain considerably increases the weight of the tent canvas, and often overcoats, and in soft ground the German infantry soldier had to be careful not to leave his boots behind him in cultivated lands."

"Infantry patrols employed signallers without any regard to reality. An enemy could easily have intercepted all the signals and shot the signallers."

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"The cavalry is always very well mounted. The men are very active and have lots of go, but they nevertheless stick too close to the infantry, which relies on them, and has only a very limited security service. One of the greatest novelties of the manœuvres was the presence of several Q.F. heavy artillery batteries, and the constant use of bivouacks."

The German Army in 1907.—The annual budget for the present year lays down the following as the composition of the German Army for 1907 :—

Infantry.—216 regiments (Prussia 166, Bavaria 24, Saxony 16, and Würtemberg 10); 1 training battalion (Prussia); 9 non-commissioned officers' schools (Prussia 7, Bavaria 1, and Saxony 1); 1 infantry school of musketry (Prussia); a small-arms experimental committee (Prussia); and a military school for musketry (Bavaria).

Foot-Jaegers.—18 battalions (Prussia 14, Bavaria 2 and Saxony 2).

Machine-gun Groups.—16 (Prussia 13, Bavaria 1, and Saxony 2).

Recruiting Offices.—298 (Prussia 230, Bavaria 32, Saxony 19, and Würtemberg 17).

Cavalry.—99 regiments (Prussia 77, Bavaria 11, Saxony 7, and Würtemberg 4); 1 military riding institute (Prussia); 1 officers' riding school (Prussia); 1 riding establishment (Bavaria); and 1 military riding establishment (Saxony).

Field Artillery.—94 regiments (Prussia 70, Bavaria 12, Saxony 8, and Würtemberg 4); 1 field artillery school of gunnery (Prussia).

Foot Artillery.—18 regiments (Prussia 15, Bavaria 2, and Saxony 1); 1 foot artillery school of gunnery (Prussia); 14 draught-harness sections (Prussia 11, Bavaria 2, and Saxony 1); 1 experiment company (Prussia).

Pioneers.—27 battalions (Prussia 21, Bavaria 3, Saxony 2, and Würtemberg 1).

Railway Troops..—3 regiments and 1 railway brigade operating section (Prussia); 1 battalion (Bavaria); 2 companies and 1 detachment of the railway brigade operating section (Saxony).

Telegraph Troops.—4 battalions (Prussia); 1 detachment in Bavaria and another in Würtemberg); 1 company (Saxony), and 4 optical telegraph sections (Prussia).

Balloonists.—1 battalion (Prussia) and 1 section (Bavaria). *Experimental section of lines of communication troops*: 1 experimental company and 1 heavy traction section (Prussia).

Transport.—23 battalions (Prussia 17, Bavaria 3, Saxony 2 and Würtemberg 1); 6 draught harness sections for the telegraph troops, the balloon battalion and the cavalry telegraph school (Prussia).—*Précis* from *Armée et Marine* and *La Revue d'Infanterie.*

Italy.

The Grand Manœuvres of 1907.—These manœuvres (the details of which were given in the JOURNAL for August last, page 1050) were held under the direction of General Saletta, Chief of the General Staff.

The *Red* side was commanded by General Magnoni, and the *Blue* by General Roger. Complete initiative was left to the commanders of each side as regards the direction of the operations. The general tendency amongst European armies to make the manœuvres as like reality as possible was most marked this year in these manœuvres, and appears to have led to excellent results. The umpire staff was exceedingly well organised

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and very numerous. The total effective of the troops amounted to 55,000 men. The Alpine troops, occupied with their usual mountain manœuvres, as is the case every year, did not take part in the regular Grand Manœuvres.

Motor cars were used not only for the transmission of orders and for staff service, but also for the work of supply. Five heavy-weight military motor trucks, now under trial, were experimented with concurrently with civilian motors of the same nature.

The corps of Northern Italy gave proof of their endurance and of their habitual dash, and the manœuvres themselves demonstrated the thorough fitness for war of the Italian Army. The employment of the Motein machine-gun by the Alpine troops gave excellent results, and the gun has been definitely adopted.

An officer of the Austrian Army offers the following criticisms of the Italian manœuvres in *Danzer's Armee-Zeitung*.

The manœuvres were supposed, in their conduct, to resemble as closely as possible the realities of war. Unfortunately considerations as regards sparing the troops almost entirely spoilt this possibility. The cessation of hostilities from noon until the evening, and the prohibition to recommence operations before 5 a.m., greatly detracted from any resemblance to war. Interference with the conduct of the manœuvres during the course of operations not only hampered the plans of the commanders of both sides, but had also an unfortunate effect on the initiative of subordinate commanders, and consequently lack of dash was noticeable in all ranks.

In spite of the enormous care taken of the men, the execution of the marches during the first days of the manœuvres can only be regarded as ordinary. The average daily marches were: Infantry, 20 kilometres (about 11¼ miles); Bersaglieri, 35 kilometres (about 20 miles); cavalry, 50 kilometres (about 29 miles); a few scouting detachments, however, did 65 kilometres (about 37 miles) a day. When one, however, considers that all were under canvas and that it rained in the evening and during the night of the 31st August, it will be seen that in spite of the extraordinary care bestowed on the men, no small demands were made on them.

The *officers* can only have made an extremely favourable impression on all observers. Self-reliant without arrogance, moderate, even frugal in their habits, they exercise an excellent influence on their subordinates, and evince a kindly consideration towards the civilian population.

Infantry.—The march discipline is not good according to our ideas. I never saw even a single company marching in step. Nevertheless, the regulation of every march, especially when advancing, may be regarded as adequate. In action, and more especially in the retreat, however, the movements of this branch of the service partook more of the nature of "picturesque disorder." Since May, 1905, the infantry have been in possession of a provisional drill regulations, containing modern views of the battle. There was little to be seen of this in the action of the troops.

The security service in action was, for the most part, very defectively performed, although the thickly covered terrain offered just the facilities for the carrying out of precisely this form of service. The result of this was an endless number of surprises. The deployment of battalions and regiments for the attack gave an impression of slackness. Here, too, the natural features of the ground were not made proper use of for protection from hostile artillery fire. The advance of the skirmishing line was made in thick masses, and the same fault was observable in the reserves. The

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skirmishing line, too, failed to make proper use of the ground, the greater part of the men took no aim with their rifles, but loosed off in the air.

Specially praiseworthy were the great precautions taken to avoid doing damage to the crops. Although reserves were frequently halted in orchards and vineyards, not the least attempt was ever made to steal the fruit.

Cavalry.—The employment of cavalry in large masses was very restricted owing to the nature of the ground. Squadrons and divisions who met in action from time to time, encountered one another, generally, on the roads. They never once forsook them in passing localities whose exits were under hostile artillery fire. When the cavalry were unable to carry out their mission mounted, they dismounted and took to their carbines. It is unpleasant to be obliged to remark that the cavalry appear to have but little comprehension of the proper care of their horses. Once a division waited for orders for two hours after the cessation of hostilities, and it never occurred to any single officer to order the girths to be loosened.

Artillery.—The *début* of the artillery was conspicuously favourable. The fire positions and approaches to the same were most carefully reconnoitred and ascertained. Although the batteries were not connected by telephone with the artillery commanders, nevertheless, connection with the latter was always forthcoming. Orders to support or assist in the repulse of an attack were always conveyed to the batteries in time. Great difficulty was experienced in exactly locating some skirmishing lines in the broken country, and with that object special artillery patrols were sent forward to the lines of skirmishers.—*Précis* from *Armée et Marine* and *Danzers Armee Zeitung.*

Army Regulations.—New Army regulations have recently been issued to the Italian Army, which will first be tried in various units. These regulations are divided into two parts, Part I. dealing with the training and Part II. with interior economy.

With regard to the training the regulations insist that powers compatible with their high position and responsibility must be given to unit commanders; it is, however, the essential duty of the latter to also leave to their own subordinates the same requisite independence and liberty. This is to be rigidly confined to the object to be attained, and according to the results achieved their capacity for and practical realisation of the liberty accorded them should be judged.

The regulations then enter minutely into the training of young officers and lay down that the moral and intellectual preparation begun in the schools must be continued and concluded in the unit, and then deal with the physical training of officers in gymnastics, fencing, swimming, riding, cycling, etc., which the regimental commander must carefully supervise.

With regard to the men's training, the regulations decide that the termination of the regimental training must be settled by the corps commander. Regimental commanders will therefore decide when the companies, squadrons, or batteries, and the battalion must be ready. The training will generally be carried out by companies.

The riding instruction for officers of the dismounted branches will be carried out by garrison between the 1st January and the 31st March.

The recruit training must, as a rule, be concluded in three months, in the dismounted, and in six months in the mounted branches of the Service. By curtailing the individual periods of instruction, however, they may be reduced to two and to three months respectively. On the termination of the recruit training instruction in ceremonial duties is carried out.

Italy. Part II., which, as has been said before, deals with interior economy, treats first with barrack regulations, and for that purpose the rules for regimental and company duty, of weekly and daily occurrence, are given. The company duty and messing arrangements are also discussed at some length.

In the infantry and engineers the company, when it does not exceed 100 men, is divided into two sections; when it is more or less than 150 it is divided into four or three sections respectively. Each section is divided into from two to four half-sections of from eight to fifteen men. In the cavalry, the squadron, when it is at least 90 horses strong, is, as a rule, divided into four sections of two half-sections each. The batteries are divided into two or three sections with the reserve section according to the number of guns present.

In Part II. the regulations are most minute with regard to guards, the walking out of the men, medical inspections and alarms. The latter must be quite unexpected and take place on different hours by day and night. In order, however, that they should not lose their value, they must not be abused. Finally, in this part of the regulations the distribution of the daily duty is laid down. Thus in garrisons when circumstances permit, the 24 hours of the day are so divided that the man has at least seven hours' sleep, six to nine hours for training, inspections, etc., according to his age, and the remainder of the day for washing himself, for cleaning his equipment, for meals and for walking out. In summer, when it is very hot, the troops may be given the afternoon free.—*Internationale Revue über die gesamten Armeen und Flotten.*

Russia. *Criticism on the Draft of the Infantry Drill Regulations.*—Under the title "Amendment of the Regulations," the Military Editor of the *Novoié Vremia* criticises the draft of the new regulations, which is here reproduced almost *in extenso*:—

"The changes introduced into the regulations now in force by the draft of the new regulations prove that the authors of the latter have endeavoured to simplify it. The late Dragomirov said, "the smaller the regulation, the greater the soldier.' As regards Souvoroff, he reduced to a few pages only his 'Art of Conquering.' The Committee has abolished some motions in the handling of arms and a certain number of commands which were of no use in either peace or war. It has, besides, authorised the carrying of the arm at the sling during marches and in action. It is a matter of curiosity to know what opportunity the soldier would have of carrying his rifle at the sling in action, when that is just the very time, if ever, when he should have it in his hands? One can only applaud the resolution of the Committee to give to the teaching of bayonet fighting the importance which belongs to it. Under the influence of the West, we were led to believe that the bayonet had had its day, and that bayonet fencing had been abolished. Nevertheless, bayonet fencing is an excellent gymnastic which develops both strength and agility; it gave the soldier, together with the offensive spirit, a conviction that it is necessary to come to hand-to-hand fighting. If, during the last war our troops showed tenacity, it is because their faith in the bayonet was not dead. Otherwise we would not have been able to enrol on our military records that wonderful attack of the Poutiloff Hill, those hundreds of Japanese attacks, all repulsed, and finally the entire epic of Port Arthur, where as much bayonet-fighting took place as at Sebastopol. Our enemy well understood

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the necessity for bayonet-fighting, as he practised himself in it even during the campaign.

"It must also be recognised that the authors of the draft of the regulations have taken steps to cause some peace parade movement to disappear, and have inserted new ones with regard to fighting.

"According to the draft of the regulations, endeavours should no longer be made to have the same number of men in each section by transferring men of one unit to another. Thus in future the men will be always under the orders of their habitual commanders, and not under a temporary one. Strangers to the Army will perhaps consider this measure as insignificant, but, nevertheless, in the midst of the din and confusion of battle, it is of the utmost importance that the soldier should be under the orders of the regular commander, whose requirements, face and voice he has known for a long time. Improvisation is the greatest enemy to good order.

"The draft of the regulations re-establishes the old group of from four to six men, with the oldest soldier as commander; this is a matter for argument. Given the exigencies of modern battle, the ideal would be to have men so trained that whilst co-operating for a common object (within the limits of their company cadres) they would, at the same time, be capable of acting with a certain independence in the skirmishing line. It frequently happens that on the initiative of some specially daring men an entire company of from 200 to 300 men rush forward. But these daring spirits are not always the oldest soldiers; nevertheless, their dash should not be curbed! It may also happen that the oldest soldier is taken from his group, and this group without its commander would be completely at a loss. Finally, in action, the losses as regards commanders are very high, and it is therefore necessary to accustom our soldiers, who are mostly incapable of taking a step without an order, to act on their own initiative.

"During the last war, the lack of decision and initiative, in all ranks, cost us very dear. As a result of the very character of the conflict, our soldiers of all ranks necessarily enjoyed a great independence; but from lack of custom they were unable to make any use of it. If our soldiers, under the enemy's fire, took no step without their commander, it was simply because they were incapable of doing so, and the officer, whether he wished to or not, had to personally devote himself to small details, which made him neglect the general supervision of his company. Our heavy loss in officers is explained exactly by this necessity for their being always seen everywhere. We repeat, our soldiers positively did not know how to fight without receiving the minutest detail of orders from their officers, and it was even the same in regiments which covered themselves with glory. This evil must be remedied by greatly developing initiative during action in all ranks. We must do our recent enemy the justice of acknowledging that they knew how to fight *individually*, whilst co-operating for a common object.

"One more characteristic innovation: the retreat by rushes, that is to say, by running. Although this method of retreat is opposed to chivalrous traditions, the experiences of the war has shown it as necessary. If, in the offensive, rapidity of advance and utilisation of the ground are the best means to be employed to diminish losses, it is absolutely futile that, when retreating, troops should serve as living targets whilst retiring at a walk. In acting thus one plays the enemy's game. If the retirement by rushes becomes regulation, it must not degenerate into a disorganised flight. (It goes without saying that this method should not be adopted if a bayonet charge is threatened.)

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"The draft of the regulations lays down an original species of fire, the "firing whilst advancing," when the charge starts at some distance from the enemy. This fire, as a rule, will give no result whatever, and its inefficacy will merely encourage the enemy. Further, it was said long ago that "dash will not stand a check." If, therefore, the last phase of the decisive attack degenerates into a wild, disorganised fire, the dash of the assaulting troops will be broken and the charge miscarry fatally.

"Finally, the number of bugle calls and rolls on the drum is diminished. During the fight the bugles and drums will remain mute, and that can be understood. For in our existing regulations we have the bugle call "Prepare to charge." It is clear that on hearing this call the enemy is warned that a charge is imminent, and can prepare to receive it. In other words, the assailant says to the enemy, "I am going to charge you." In the epic times of Sebastopol this method of action may have been regarded as very chivalrous; but nowadays it is very inconvenient to the assailant and most agreeable to the defender.

"In the modern battle large objectives are no longer clearly visible; there are no longer slow, uninterrupted, offensive advances; there are no longer theatrical charges in close columns; on the contrary there is an invisible enemy hidden in the folds of the ground; a fire which is only indicated by the whistling of the bullets, the bursting of the projectiles and the losses in men; a fire opened at very long ranges and having the power of a species of hail of iron and lead, a deafening din in which commands cannot be heard and which compels everyone to know how to fight individually. Now, it seems to us that the new draft should lay more stress than it does on these new difficulties of modern combat, so that the rank and file may accustom themselves, on peace manœuvres, to these depressing features of a conflict with a distant and invisible enemy."—*La Revue d'Infanterie.*

Spain

The Manœuvres in Galicia, 1907.—The manœuvres, which took place this year in Galicia, were more especially a trial of mobilisation in those provinces, from which there is more emigration to the United States than from any other part of Spain. At the same time it was desired to ascertain what facilities were offered by the railways and roads for a rapid concentration of troops.

With this object the partial mobilisation of an army corps was ordered, under the direct command of the Headquarters Staff. This corps was ordered to consist of the Galicia and Leon Divisions, each reinforced by a company of sappers and some telegraphists and balloonists. A volunteer motor section was at the disposal of the Headquarters Staff and the director of the manœuvres.

The general idea of the manœuvres was to concentrate these forces to the west of Monforte de Lemos, the centre of most important communications, towards which an enemy, who had disembarked on the Galician coast and was already master of Lugo, was supposed to be marching.

Only men of the regular army on leave and those of the first three years of the reserve were called out. These sufficed to bring the battalions up to a strength of 500 men, whilst leaving in the ordinarily occupied posts the forces necessary for the most indispensable services. The results of this mobilisation were most satisfactory, and even greatly exceeded the most sanguine anticipations. As a matter of fact the Headquarters Staff had

Spain. expected 50 per cent. of absentees, whereas only 17 per cent. were actually absent, and they were, for the most part, emigrants and others who had gone temporarily to Cuba, for agricultural labour, and had not had time to rejoin.

The concentration of these troops took place on the 21st September in the Mao Valley, along the road from Lugo to Quiroga, 2½ miles to the south of the Boveda railway station. They were conveyed by 15 military trains, which commenced arriving before 7 a.m. Two infantry regiments, one artillery, and one cavalry regiment marched by route.

As soon as they detrained at Monforte de Lemos, or at Boveda, they were directed towards an encampment of about 1,800 tents, supposed to be sheltered from the enemy's fire. At 11 p.m. the concentration was finished and all the troops were in the encampment. The reasons which decided the Headquarters Staff to lay out an encampment were that in Galicia the houses are very scattered and very small; the climate, too, is very damp and subject to frequent and dangerous changes of temperature; and it was considered inadvisable to expose the men to the inconveniences of a four days' bivouac.

The manœuvres were not, as may be seen, on a large scale. They only lasted one day. On the 22nd, on the arrival of the King, two cavalry regiments left, towards midday, to reconnoitre, accompanied by a telegraph section, and some staff officers in motors. A captive balloon was also employed. On the enemy being signalled the army corps deployed, on the morning of the 23rd, on a line of hills about 3½ miles from the encampment. Firing commenced, but only lasted till midday, when the enemy was supposed to be vanquished. The following day the King reviewed the 10,000 men, and 15 trains took them back to their garrisons; those who came by march route returned the same way. These were the first manœuvres directed by the Headquarters Staff since its creation.—*La France Militaire.*

Switzerland. *The Grand Manœuvres of* 1907.—The following criticism of the recent manœuvres is taken from the *Revue Suisse Militaire*:

The Ist Army Corps has been disbanded: The manœuvres were carried out under satisfactory conditions; they were favoured by the best of weather, and the *moral* and health of the troops left nothing to be desired, thus the general impression produced by this year's assembly of 18 days is good. Many errors were committed, and many imperfections were brought to light, but on the whole some progress appears to have been made. From the very commencement in most of the units, large or small, they have not yet got over all awkwardness in taking over and in exercising the command. This awkwardness is inherent in our system of biennial courses and will only completely disappear with them. In spite of the rule for the preparation of drill programmes by all Commanders of units before the calling out of the men, the intellectual training for the manœuvres remains insufficient. Too many officers, once their uniform is laid aside, take no further interest in Military study, and quite give up keeping themselves informed on matters affecting even their own command. For such officers more or less time is necessary in order that they may reaccustom themselves to their duties. Until then they disorganize the command of their Chief, have to make far greater effort to carry out their own command, and by their indecision add to the fatigue of their men.

The connection between columns appears to have progressed. Commanders of columns paid more constant attention to this than they did

Switzerland. before, without waiting to be urged to do so by their Commander-in-Chief, who cannot always attend to such matters. Unfortunately the means for carrying out this connection were sometimes limited, and to that, no doubt, was due the slowness of certain movements which caused criticism. Brigades and regiments hesitated to advance without being oriented on the situation by the troops co-operating in the movement, which was thus thrown out of gear.

The connection, too, between infantry and artillery was not what it might have been. The impression was sometimes conveyed that the infantry marched too quickly to suit the artillery, and that the latter did not follow the movements of the former either sufficiently close or with enough attention. Examples might be cited where the infantry found itself unmobilized for a greater or less time on account of the lack of support on the part of the batteries. In this regard the artillery commanders state that they were often not sufficiently informed with regard to the situation or the progress of the action, which prevented them from advancing with the assurance desirable.

The cavalry showed great dash in its charges, perhaps a little too much occasionally, which caused exceedingly unrealistic situations. Too great fault, however, should not be found with them for this.

Volunteer motorists made their first appearance at these manœuvres, and were a success. They were much appreciated by the Staffs to which they were attached. But in addition to these official motors there was a considerable employment of unofficial ones, and the use of the latter was greatly abused. The spectacle of commanders of battalions returning to the cantonments after the manœuvres in a regimental car, whilst their units marched back under a captain of a company or the adjutant of the battalion, was not a pleasing one. The place of a battalion commander is on his horse or on foot at the head of his men, and it is there that his subordinates and superiors should find him for their reports or their orders. In the Swiss Army the average age of a battalion commander is 38 or 39. At that age he should be in possession of his full physical vigour, and a few hours more on a horse should not cause him any exaggerated fatigue. A motor should be regarded as an auxiliary to the command, but should be condemned when its object appears to be merely to pander to the comfort of the officer. It facilitates reconnaissance and the carrying of reports and intelligence, apart from these the commander of a unit should remain near his men, share their fatigue, and give them an example of endurance and of physical activity.

Another experiment with regard to motors was that of meat wagons. They were experimented with during three divisional days, one wagon being supplied to each infantry regiment. These wagons, carrying one kitchen and four butchers for each battalion, formed part of the regimental supply and baggage train. When the manœuvres ended they were detached from the transport column and at once sent to the contonments of the battalions of their regiments. They generally arrived there before the men, who were able to find their soup on the fire and to have a meal as quickly as possible.

United States. *Militia of the United States.* — In his report relative to the Militia of the United States for the fiscal year ending 30th June, 1907, Major-General F. C. Ainsworth, Adjutant General of the Army, announces that 7,330 officers and 81,713 enlisted men were present at the spring inspections for the War Department, and that the absentees numbered 307 officers and

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14,933 enlisted men, out of a total organised strength of 105,213. The number of men reported to have been "absent without leave" was much smaller than at former inspections. In the inspection of 1906, out of 105,693 officers and enlisted men, 14·84 per cent. were absent, and in that of 1905, out of 111,313 officers and enlisted men, 18·19 per cent. In 1904 the percentage was 21·02 and in 1903 it was 23·45. These figures show a steady increase in the relative numbers of members of the organised militia present at the inspections.

New York, with 920 officers and 13,314 enlisted men, had the largest force, and Nevada, with eight officers and two enlisted men, the smallest. The companies that composed the organised Militia of the latter State were mustered out 20th May, 1906. The second largest force is that of Pennsylvania, with 721 officers and 9,167 enlisted men, and the second smallest is New Mexico, with 32 officers and 226 enlisted men.

Since the Dick Act became operative there has been a decrease of almost 10 per cent. in the total strength, due, in part, to the disbandment or reformation of inefficient organisations.

Of the annual appropriation of 2,000,000 dollars for the Militia, the Secretary of War set aside 1,500,000 dollars for arms, equipments and camp purposes, and 500,000 dollars for the promotion of rifle practice, the latter item including the acquirement, construction, equipment and maintenance of shooting galleries and target ranges.

Several of the adjutants-general claim that the distribution would be more equitable if it were made on the basis of the number of men actually enrolled. The effort to obtain the prompt transmission of accurate returns was no more successful than in previous years, and they were no more accurate or complete. The correction and completion of these returns required much correspondence with the State authorities.

The War Department has decided that unless the organisation of the staff and the units of the Militia of a State is in entire accord with the Regular and Volunteer Armies of the United States, the conformity required by Section 3 of the Militia law does not exist. As a result, many of the Militia organisations reported in 1906 as conforming to the Regular Army appear in this report as not being in conformity. In a majority of the States this lack of conformity can be remedied without much difficulty, because State executives have authority, under the Militia codes of their respective States, to change the organisation of the Militia forces of the State. In some few States and territories legislative action will be necessary. The States that conform the closest to the organisation of the Army required are the following: Colorado, Florida, Missouri, Ohio, Oklahoma, Tennessee, Texas, State of Washington and Wisconsin.

The reports of the annual inspections were much more satisfactory than those of former inspections, showing that of the 2,179 organisations inspected, 1,437 were fully armed, uniformed, and equipped for field service at any season of the year; that 25 were fully armed, uniformed and equipped for service during summer only; that 221 were deficient in articles of clothing, camp equipment, kitchen utensils, or ordnance and ordnance stores, and that 496 were not sufficiently armed, uniformed, and equipped for field service. The same conditions exist with regard to overcoats that have obtained during the past four years, it being considered by the States to be a waste of money to obtain supplies of such an expensive article without a place in which to store them and to care for them in a proper manner.

As in previous years, there are many recommendations for a change in the time set for the inspections. The time favoured generally for these

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inspections seems to be the encampment period, which extends from the 1st June, in the Northern and Eastern States, to the end of November in the Southern and South-Western States.

These inspections, however, are made to ascertain whether the various States are entitled to the use of their appointment for pay, subsistence, and transportation; and as such information must be available at the beginning of the fiscal year, it is impracticable to defer the inspections until after that period.—*U.S. Army and Navy Journal.*

NAVAL AND MILITARY CALENDAR.

OCTOBER, 1907.

5th (Sat.) Launch of third-class cruiser "Dresden" from the yard of Blohm and Voss, Hamburg, for German Navy.

13th (S.) 2nd Bn. Hampshire Regiment arrived in South Africa from Bermuda in the "Soudan."

14th (M.) XIIIth Brigade R.H.A. arrived in South Africa from England in the "Braemar Castle."

19th (Sat.) XIIth Brigade R.H.A. } left South Africa for Mauritius and
" " 2nd Bn. L. North Lanc. Regt. } India in the "Soudan."

21st (M.) Launch of first-class armoured cruiser "Kurama" from Imperial Japanese Dockyard, Yokosuka.

25th (F.) 2nd Bn. L. North Lanc. Regiment arrived in Mauritius from South Africa in the "Soudan."

26th (Sat.) H.M. the King received the Lord Lieutenants of Counties and addressed them with regard to the Territorial Army Scheme.

" " 2nd Bn. Prince of Wales's Leinster Regiment (Royal Canadians) left Mauritius for India in the "Soudan."

Addendum to September Calendar.

Sept. 15th (S.) Launch of first-class armoured cruiser "Pisa" at Leghorn of Italian Navy.

FOREIGN PERIODICALS.

NAVAL.

Sept

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from Cavalry Journal).—"Only Hits Count." "On the Range." "Target Practice in England." "The Campaign against the Utes." "The Soldier's Pay." "From the German Capital." "Essay on Field Artillery." "Infantry Increase." "The States Forces."

Journal of the U.S. Cavalry Association. Fort Leavenworth, Kansas: October, 1907.—"A Song of the Cavalry." "The Second Cavalry Division, Army of the Potomac, in the Gettysburg Campaign." "Mess Outfit for Pack Transportation." "Circulating Library for Cavalry and Infantry Officers." "Appliances for Crossing Streams." "An American Army Reserve." "Sore Backs on Cavalry Horses." "Remounts." "Reprints and Translations." "Military Notes."

NOTICES OF BOOKS.

The Salamanca Campaign. By Captain A. W. MARINDIN, Black Watch. London: Hugh Rees, Ltd., 1906.

The author states in his preface that he has made no attempt to produce a popular narrative of the campaign of 1812, but has rather striven to build up a framework for the student himself to fill in, and on which he may fill in his conclusions as to the lessons for future guidance. In this, Captain Marindin would seem to have been very successful; he has prepared in brief a thoughtful account of the great battle and of the events which led up to it, and has even succeeded in overcoming to a great extent the difficulty of accurate description of what happened on the French side—a difficulty due to the marked discrepancy to be noticed among all the authorities. In an appendix are interesting extracts from the conflicting accounts of such actors and historians as Napier and Alison, Marmont and Thiers, while not the least valuable part of this study is the chapter dealing with the lessons to be learnt and the various points to be thought out.

The volume is admirably got up—it is indeed almost an *édition de luxe*—printed on one side only of the paper, and with a plan at hand showing the dispositions of the troops for almost every day upon which they were engaged. The names of some few of the places mentioned in the text do not, however, invariably appear to agree with the spelling of the same to be found on the maps; Pakenham, too, is for some reason throughout spelt Packenham. The maps and plans are very clear, devoid of unnecessary detail, and on a large scale, while the *data* from the returns of the allies and from the Imperial French muster rolls have been collated with much care. It is to be noticed that the author accepts Jones' authority for the statement that Napoleon invaded Russia to avoid the risks of himself attempting to bring the campaign in the Peninsula to a satisfactory conclusion.

The Waterloo Campaign. By Lieut.-Colonel S. C. PRATT. London: Swan, Sonnenschein & Co., Ltd., 1907.

This is the fifth volume of Messrs. Swan and Sonnenschein's Special Campaign Series, and well maintains the high standard set by those which have preceded it, and especially by the study of "Saarbrück to Paris," for which the author was also responsible. There would seem to be no limit to the literature of Waterloo, and almost every year some fresh documents, public or private, are unearthed, which throw increased light upon certain phases of the campaign or events of the great battle. Only

last year General Pollio's work on Waterloo produced some documents hitherto unpublished, and to this book Colonel Pratt would appear to be indebted for an interesting letter from Marshal Ney, written on the night of Quatre Bras.

Lieut.-Colonel Pratt has written a very clear account of the campaign, and has given due prominence to its main features; he has made no attempt to discover any new rendering of the main story, but has evolved a narrative which is at once interesting and instructive, and which contains a large and varied list of references wherein the more inquiring reader will be able to find many details omitted in the present work. There is an excellent sketch of the general situation at the opening of the campaign, a clear discussion of the various reasons which influenced Wellington in the disposition and ultimate movements of his army; the limitations of the staffs of the contending armies are luminously set forth; and, finally, there is a short but very clear and interesting chapter on the d'Erlon episode, recounting the reasons for the futile wanderings of that corps between the battlefields of Ligny and Quatre Bras.

The maps are good and clear, and in the appendices are to be found some interesting letters from Napoleon and his Marshals, including that from Ney to Soult, of which we have already made mention.

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Summary of Tactics for Examinations, including Lessons of the South African and Russo-Japanese Wars. 5th Edition. By Major J. MARKHAM ROSE. Crown 8vo. 6s. (W. H. Barrell.) Portsmouth, 1907.

Letters and Papers of Charles, Lord Barham, Admiral of the Red Squadron, 1758-1813. Edited by Sir JOHN KNOX LAUGHTON. 8vo. London, 1907.

A Dictionary of Military Terms. English-Japanese, Japanese-English. By Captain E. F. CALTHORP. Crown 8vo. 6s. Tokyo, 1907.

Soldiers of Fortune in Camp and Field. By A. INNES-SHAND. 8vo. 10s. 6d. (Archibald Constable & Co., Ltd.) London, 1907.

Sketch Maps, with Notes, to Illustrate the Waterloo Campaign of 1815. By Lieut.-Colonel H. M. BRUNKER. Fcap. folio. 2s. 6d. (Presented.) Holbrook & Son, Ltd.) Portsmouth, 1907.

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Chile. By G. F. SCOTT ELLIOT. 8vo. 10s. 6d. (T. Fisher Unwin.) London, 1907.

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